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**Materiały do znajomości wachlarzykowatych
(*Lepidoptera*, *Crambidae*)**

**Część XIV. Rewizja europejskich gatunków
z grupy rodzajowej *Crambus* F. s. l.**

**Материалы к познанию семейства
Crambidae (*Lepidoptera*)**

**Част XIV. Ревизия европейских
видов рода *Crambus* F. s. l.**

**Studies on the *Crambidae* (*Lepidoptera*)
Part XIV. Revision of the European species
of the Generic Group *Crambus* F. s. l.**

[Pl. XXVII—XCII]

In this paper I present my further investigations on the genus *Crambus* F. s. l. I have presented the results achieved thus far in several previous publications of the series „Studies on the *Crambidae*“ (or „Studies on the Genus *Crambus* F.“). They were rather fragmentary and did not show the true constitution of the group in question. Now, after studying about 190 holarctic species of the genus *Crambus* F. s. l. (i. e. about 60%) and after the investigation of their genitalia I know this group better and I understand better the relations between the species. This has enabled me to make a revision of the 121 European species of the genus *Crambus* F. s. l. Many borrowed materials as well as my own collection and the collection of Institute of Zoology of the Polish Academy of

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Sciences (I. Z. P. A. S.) in Warszawa, made this work possible. This material includes almost all European species of the group *Crambus* F. s. l. As far as the types are concerned substantial assistance has been shown to me by Prof. Dr. E. M. HERING from the Zoologisches Museum der Humboldt Universität in Berlin, Dr. J. D. BRADLEY from the British Museum (Nat. Hist.), Dr. M. BEIER and Dr. SCHÖNMANN from the Naturhistorisches Museum in Wien, as well as Dr. L. GOZMÁNY from Magyar Nemzeti Museum, Budapest. I have obtained for investigation from Berlin the types of *Crambus tersellus* LED., *Crambus desertellus* LED., *Crambus delicatellus* ZELL., *Crambus vectifer* ZELL., *Crambus osseellus* HAMPS., *Crambus cuencalis* HAMPS., *Crambus dalmatinellus* HAMPS., *Crambus epineurus* MEYR. *Crambus caucasicus* ALPH., genital preparations of the types of *Crambus digitellus* H.-S. and *Crambus monotaeniellus* H.-S. as well as other valuable comparative materials. The photographic laboratory of the British Museum (Nat. Hist.) sent me the photographs of specimens and their genitalia of the types of *Crambus ramosellus* ZELL., and *Crambus paleatellus* ZELL. From Naturhistorisches Museum in Wien I have received for investigation the type of *Crambus caradjaellus* REBEL and the paratypes of *Crambus steppicollus* ZERNY, *Crambus nebrodellus* ZERNY, *Crambus pseudotristellus* ZERNY, *Crambus aetnellus* ZERNY, and other *Crambidae*. Many valuable materials were sent to me by exchange and so: from Czechoslovakia by Dr. R. SCHWARZ and Prof. VLACH of Prague, from Hungary by Dr. L. GOZMÁNY of Budapest, from Austria by Dr. M. BEIER and Dr. SCHÖNMANN of Wien, Dr. J. KLIMESCH of Linz, Mr. J. THURNER of Klagenfurt, Mr. K. BURMANN of Innsbruck, from Germany by Prof. Dr. E. M. HERING of Berlin, the late Mr. L. OSTHELDER of Kochel, Dr. G. de LATTIN of Geilweilerhof, Dr. H. G. AMSEL of Buchenberg (Baden), Mr. E. JÄCKH of Bremen, from Great Britain by Dr. J. D. BRADLEY of London, Mr. PELHAM-CLINTON of Edinburgh, from Finland by Dr. J. HACKMANN of Helsingfors, from France by Dr. P. E. L. VIETTE of Paris, the late Mr. C. FISCHER of Mulhouse, Mr. ADKIN of St. Jean-de-Luz, Major D. LUCAS of Auzay (Vendée), from Holland by the late Mr. C. DOETS, from Italy by Dr. A. FIORI of Bologna,

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I could not obtain some literature entries such as HAWORTH'S *Lepidoptera Britannica*, or THUNBERG'S *Dissertatio Entomologiae*. These are very important for the investigation of the synonymy. Therefore I tried to solve this problem using other, available titles. This may be the cause of some errors but such cannot be eliminated. In many cases I could not obtain the original descriptions of several subspecies or aberrations, therefore I am restricted only to quote their names and the papers which deal with them.

GENERAL PART

Historic remarks

The first species of the group *Crambus* F. s. l. were described in 1758 by LINNAEUS. They were *Phalaena Tinea pascuella* L., *Phalaena Tinea Pratella* L., and *Phalaena Tinea Culmella* L. Until his publications to the end of the XVIII century only a few species were described. Thus SCOPOLI in 1763 described three species *Tinea perlella* SCOP., *Tinea craterella* SCOP., and *Tinea chrysonuchella* SCOP. In 1775 DENIS and SCHIFFERMÜLLER gave the descriptions of *Tinea inquinatella* DEN. & SCHIFF., *Tinea conchella* DEN. & SCHIFF., *Tinea combinella* DEN. & SCHIFF. and *Tinea falsella* DEN. & SCHIFF. THUNBERG in 1788 described only one species which was not synonymized with others, viz. *Tinea hamella* THNBG. FABRICIUS described several species of the group *Crambus* F. s. l. but none valid, all were placed into synonyms.

The genus *Crambus* F. was established by FABRICIUS in his work *Supplementum Entomologiae Systematicae* published in 1798. It contains 62 species, only a part of which was left

later as belonging to genus *Crambus* F. Since FABRICIUS's publication until the middle of the XIX century the name *Crambus* F. is used rarely by a few authors. It is then used by LATREILLE in *Histoire Naturelle des Lépidoptères* (1805), HAWORTH in the 2nd part of *Lepidoptera Britannica* (1811), DUPONCHEL in *Histoire Naturelle des Lépidoptères de France* (1836). ZINCKEN in *GERMAR Magazin* (vol. II, 1817), TREITSCHKE in *Schmetterlinge von Europa*, ZETTERSTEDT in *Insecta Lapponica* (1840) as well as EVERSMAAN in *Lepidoptera Volgo-Uralensis* (1844) use for the species of the genus *Crambus* F. s. l. the generic name *Chilo* HBN. HAWORTH in the III vol. of the *Lepidoptera Britannica* places the species of the group in question in the genus *Palparia* HAW. HÜBNER in his first works as *Sammlung Europäischer Schmetterlinge* etc. gives the species of the group *Crambus* F. s. l. under the name *Tinea* L. In his very complicated systematics given in *Verzeichniss Bekanntter Schmettlinge* (1825) [sic!] HÜBNER did not recognize the generic name *Crambus* F. but established several genera in which he placed the species of the group *Crambus* F. s. l. These units were called coitus (Berein) and corresponded to the category of genera. The species of the group *Crambus* F. s. l. were placed by HÜBNER in such coiti like *Argyroteuchia* HBN., *Catoptria* HBN., *Agriphila* HBN., *Pediasia* HBN., *Chrysoteuchia* HBN., *Thisanotia* HBN., *Exoria* HBN., and *Eucarphia* HBN. Except the genus *Agriphila* HBN. all others had not been recognized by later authors and went into oblivion. Genus *Agriphila* HBN. was revised by HEINEMANN in the work *Die Schmetterlinge der Schweiz* (1865) for *Agriphila deliella* (HBN.). Later this genus was recognized by DE JOANNIS (1932) and LHOMME (1935). As I will show later on, several of HÜBNER's genera deserve restoration.

FERNALD states that the species *Phalaena Tinea Pascuella* L. was designed in 1825 by CURTIS in his *British Entomology* vol. III, p. 109, as the *typus generis* of the genus *Crambus* F.

In 1863 ZELLER published his monograph dealing with all the species of the *Crambidae* then known. Only a small number of European species of the group *Crambus* F. s. l. was described there. In the same year, some months earlier, WALKER's work was published. In both papers a number of the same

species was described under different names, so that ZELLER's were put as synonyms.

ZELLER (1863) established a new genus *Calamotropha* ZELL. for the species *paludellus* HBN. and *aureliellus* F. R. This genus was not used later by any authors although ZELLER was quite right creating it. Since ZELLER's monograph no work was published dealing especially with the whole European Fauna of species belonging to the genus *Crambus* F. s. l.

In the second half of the XIX century and later until now the generic name *Crambus* F. is commonly used. In 1952 a paper was published by G. DE LATTIN in which the author creates a new genus *Crambopsis* DE LATTIN for *Crambus malacellus* DUP. In 1954 I have published a paper in which I restore the genera *Pediasia* HBN. and *Calamotropha* ZELL. and give the generic types for them (*Tinea fascelinella* HBN. for the genus *Pediasia* HBN. and *Tinea paludella* HBN. for the genus *Calamotropha* ZELL.).

In 1955 I established the genus *Xanthocrambus* BLESZ. for the species of the group *Crambus delicatellus* ZELL., and in 1956 I separated from the genus *Agriphila* HBN. the genus *Catoptria* HBN. with typus generis *Crambus permutatellus* H.-S.

Taxonomy

Genus *Crambus* F. s. l. forms a very numerous and heterogeneous group including several hundred species distributed almost in all parts of the world. It consists of several groups, slightly related to each other and united together on the basis of a similar venation. Some tendencies to break this group into smaller ones occurred already in the first half of the XIX century. As I mentioned above HÜBNER in 1825 established for the species then known and belonging to the genus *Crambus* F. s. l. several higher systematic units corresponding to genera. HÜBNER's systematics is somewhat complicated and it is difficult to find for some of his systematic units adequate ones in the recent nomenclature. HÜBNER's systematics ladder was a follow:

Horde — Phalanx
 Rotte — Tribus
 Stamm — Stirps
 Familie — Familia
 Berein — Coitus
 [Species]

The species of the genus *Crambus* F. s. l. belong to: VI Phalanx-*Pyralides*, III Tribus-*Vulgares*, III Stirps-*Tetrachilae*, to three Familiae — A, B and F, and to several coiti in these families. According to the modern nomenclature HÜBNER's Phalanx would correspond to the super-family- (*Pyraloidea*). For such units as Tribus, Stirps, and Familia it is difficult to find such parallels. HÜBNER's Tribus, *Vulgares* for example, includes the species belonging not only to the family *Crambidae*, but also to *Phycitidae*. Such units as Stirps and Familia could eventually correspond to such recent units as subfamily, tribus or supergenus. The arrangement in HÜBNER's genera (coiti) is as follows:

„Familia A — *Margaritiferae*

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Coitus 2 — *Argyroteuchiae* — Die Schwingen mit einem silberglänzenden Streif und winkeligen Linien bezeichnet.

- A. Ericalis* [now — *Crambus ericellus* (HBN.)]
A. Dumetalis [“ — *Crambus dumetellus* (HBN.)]
A. Pascualis [“ — *Crambus pascuellus* (HBN.)]
A. Enemoralis [“ — *Crambus pratellus* (L.)]
A. Ensigeralis [“ — *Crambus hamellus* (THNBG.)]
A. Adippalis [“ — *Crambus silvellus* (HBN.)]
A. Saltalis [“ — *Crambus ? pratellus* (L.)]
A. Falsalis [“ — *Catoptria falsella* (DEN. & SCHIFF.)]
A. Alpicolalis [“ — *Platytes alpinellus* (HBN.)“

It is evident that in this genus the species prevail belonging to the genus *Crambus* F. s. str. [generic type of this genus is *Crambus pascuellus* (L.)]. This shows that *Argyroteuchia* HBN. is synonymous with *Crambus* F. s. str.

„Coitus 3 — *Eucarphiae* — Die Schwingen mit splitterförmigen silbernen Streifen ausgezeichnet.

E. Radialis [now — *Catoptria radiella* (HBN.)]

E. Fulgidalis [“ — *Catoptria fulgidella* (HBN.)]

E. Vinetalis [“ — *Eucarphia vinetella* (F.)]“

The genus *Eucarphia* HBN. is valid for *Eucarphia vinetella* (F.). The two remaining species belong distinctly to *Catoptria* HBN.

„Familia B.

Coitus 1 — *Catoptriae* — Die Schwingen mit silbernen Spiegelflecken der Länge nach geziert.

C. Eumargaritalis [now — *Catoptria margaritella* (DEN. & SCHIFF.)]

C. Pinetalis [“ — *Catoptria pinella* (L.)]

C. Conchalis [“ — *Catoptria conchella* (DEN. & SCHIFF.)]

C. Mytilalis [“ — *Catoptria mytilella* (HBN.)]

C. Speculalis [“ — *Catoptria speculalis* HBN.]

C. Luctiferalis [“ — *Catoptria luctiferella* (HBN.)]“

This genus comprises exclusively the species nearly related to each other and deserves restoration as I will show further on.

„Coitus 2 — *Agriphilae* — Die Schwingen mit einem blasen Strich durch die Länge

A. Selasalis [now — *Agriphila selasella* HBN.]

A. Pratalis [“ — *Crambus dumetellus* (HBN.)]

A. Delialis [“ — *Agriphila deliella* (HBN.)]

A. Aquilalis [“ — *Agriphila tristella* (DEN. & SCHIFF.)]

A. Exoletalis [“ — *Pediasia ? luteella* (DEN. & SCHIFF.) ♀]“

This genus comprises with the exception of *A. exoletalis*, the species very nearly related to each other and deserves the preserving of its exclusion. It was restored by HEINEMANN (1865) and after by DE JOANNIS (1932) and LHOMME (1935), who designed „[*Tinea*] *deliella* HBN.“ as the typus generis.

„Coitus 3 — *Pediasiae* — Die Schwingen mit fast unterbrochenen Bogenlinie bemerkt.

P. Inquinatalis [now — *Agriphila inquinatella* (DEN. & SCHIFF.)]

P. Squalidalis [“ — *Pediasia squalidalis* HBN.]

P. Fascelinalis [“ — *Pediasia fascelinella* (HBN.)]

P. Immistalis [“ — *Agriphila geniculea* (HAW.)]

P. Contaminatalis [“ — *Pediasia contaminella* (HBN.)]

P. Lutealis [“ — *Pediasia luteella* (DEN. & SCHIFF.)]”

I restored this genus in my paper (1953), where I designed *Tinea fascelinella* HBN. as typus generis.

„Familia C — *Aeratae*

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Coitus 2 — *Chrysoteuchiae*

Ch. Hortalis [now *Crambus hortuellus* (HBN.)]

Ch. Caricetalis [“ — *Crambus hortuellus* (HBN.)]“

This species as I will show later on, besides great differences in the habitus as well as in the build of the genitalia, belongs to the genus *Crambus* F. s. str.

„Coitus 3 — *Thisanotiae* — Die Schwingen zwischen den Venen dunkel bestäubt, glänzend begrenzt.

T. Chrysonuchalis [now — *Thisanotia chrysonuchella* (SCOP.)]

T. Roralis [“ — *Chrysocrambus craterellus* (SCOP.)]

T. Auriferalis [“ — *Platytes cerusellus* (DEN. & SCHIFF.)]“

In this genus HÜBNER joined together three species only distantly related. I left this genus for *Tinea chrysonuchella* SCOP. which is simultaneously its generic type.

„Coitus 4 — *Exoriae* — Die Schwingen blassenig, mit dunklen Venen und glänzenden Franzen.

E. Combinalis [now — *Catoptria combinella* (DEN. & SCHIFF.)]

E. Convolutalis [“ — *Zophodia convolutella* (HBN.)]

E. Culmalis [“ — *Agriphila culmella* (L.)]“

I synonymize this genus with *Catoptria* HBN. to which belongs one of the species included in HÜBNER's genus *Exoria* HBN. Although the group in the genus *Catoptria* HBN., to which *Catoptria combinella* (DEN. & SCHIFF.) belongs, is a very distinct one, it does not deserve establishing of a separate genus.

„Familia F — *Poliae*

.....

Coitus 2 — *Selagiae* — Die Schwingen glänzend oder schimmernd zeichnungslos.

S. Perlalis [now — *Crambus perlellus* (SCOP.)]

S. Argyralis [“ — *Selagia argyrella* (DEN. & SCHIFF.)]

S. Lythargyralis [“ — *Catoptria lythargyrella* (HBN.)]“

This genus was recognized for *Tinea argyrella* DEN. & SCHIFF., the remaining two were joined with it by HÜBNER because of its similarity of the coloration of the fore wings.

Summing up, it is evident that in some cases HÜBNER very rightly joined several closely related species in his coiti, as it is in the groups *Catoptria* HBN., *Argyroteuchia* HBN., *Agriphila* HBN. and *Pediasia* HBN. His other genera comprise the species little related with each other. Some of them as *Eucarphia* HBN. or *Selagia* HBN. were recognized for the species belonging to the family *Phycitidae*, or should be synonymized as for example *Exoria* HBN. I have recognized for the group *Crambus* F. s. l. the following of HÜBNER's genera: *Catoptria* HBN., *Agriphila* HBN., *Pediasia* HBN., and *Thisanotia* HBN.

The next generic name for the species of the group *Crambus* F. s. l. was introduced by ZELLER in 1863. He included several species of the genus *Crambus* F. into a separate one, named *Calamotropha* HBN. The European species *C. paludella* (HBN.) and *C. aureliella* (F. R.) were placed there. As these species differ distinctly from the remaining ones of the group *Crambus* F. s. l. I think that it is right to preserve this genus. The name *Calamotropha* HBN. was used by only a few authors.

In 1952 DE LATTIN established for *Crambus malacellus* DUP. a separate genus *Crambopsis* DE LATTIN. This genus beside very distinct differences in the constitution of the ge-

nitalia has a very characteristic geographical distribution, quite different than the genus *Crambus* F. s. str. While the species of the genus *Crambus* F. s. str. are distributed in the Holarctic region and the Neotropic region, the genus *Crambopsis* DE LATTIN (as far as I know) occurs in the Mediterranean region, southern China and Indo-Australia.

HÜBNER'S and ZELLER'S divisions were based on the coloration and design of wings with disregard of the build of the genitalia. Nevertheless they should be considered as right in many cases. The division of British species of the genus *Crambus* F. s. l. should be considered here made in 1938 by PIERCE & METCALFE. It is the only work discussing a greater group of species of the genus *Crambus* F. s. l. on the basis of the build of their male and female genitalia. PIERCE & METCALFE placed all British species of the genera *Crambus* F. s. l. and *Platytes* GUEN. in one genus *Crambus* F. They divided this genus into 5 groups, the first of which comprising two species *Crambus pascuellus* (L.) and *C. silvellus* (HBN.) has no specification and the next ones are provided with the letters A. to D. The species united in these groups were unfortunately divided in a rather chaotic way without deeper justification. This was much due to the fact that the male genital preparations were spread out which caused their severe disfigurement. The build of the male genitalia of *Crambidae* requires their preparation in a lateral position. In the first not named group PIERCE & METCALFE placed two species *C. pascuellus* (L.) and *C. silvellus* (HBN.), the first of them as *typus generis* the second as the species characteristic for the genus *Crambus* F. Their further division is as follows (names in parentheses show the genus which the given species belongs to).

Group A.

„ <i>Crambus hortuellus</i> HB.	[<i>Crambus</i> F.]
<i>Crambus culmellus</i> L.	[<i>Agriphila</i> HBN.]
<i>Crambus geniculeus</i> HW.	[<i>Agriphila</i> HBN.]
<i>Crambus falsellus</i> SCHIFF.	[<i>Catoptria</i> HBN.]
<i>Crambus latistrius</i> HW.	[<i>Agriphila</i> HBN.]
<i>Crambus inquinatellus</i> SCHIFF.	[<i>Agriphila</i> HBN.]
<i>Crambus tristellus</i> SCHIFF.	[<i>Agriphila</i> HBN.]

<i>Crambus selasellus</i> HB.	[<i>Agriphila</i> HBN.]
<i>Crambus myellus</i> HBN.	[<i>Catoptria permutatella</i> (H.-S.)]
<i>Crambus margaritellus</i> HB.	[<i>Catoptria</i> HBN.]
<i>Crambus verellus</i> ZK.	[<i>Catoptria</i> HBN.]
<i>Crambus furcatellus</i> ZETT.	[<i>Catoptria</i> HBN.]
<i>Crambus pinellus</i> L.	[<i>Catoptria</i> HBN.]“

PIERCE & METCALFE give as characteristic features of this group: „Uncus and gnathos tubular. Aedeagus with spines before the apex, generally with cornuti. Ovipositor has two pads with very short rods, penultimate segment without rods. Ostium extends in projecting funnel. Signum one, scobinate“. I do not think that the tubularity of the uncus and gnathos is a generic or group feature. Some species of other groups of PIERCE & METCALFE have the shape of these parts similar after all. The hook near the end of the aedeagus is indeed a feature of some importance for the genus *Agriphila* HBN. It is, however, the one varying in some species, besides this feature is possessed by only 6 of the 13 species of PIERCE's group A, and just by these which I place in the genus *Agriphila* HBN. Ovipositor with small exceptions is of similar build in all species of the group *Crambus* F. s. l. A peculiar shape of ovipositor, worth distinction appears in species belonging to the genera *Calamotropha* HBN. and *Crambopsis* DE LATIN. The next feature distinguishing the species of PIERCE's & METCALFE's group A is the shape of ostium bursae, which is said to be distinct as a projecting funnel. This feature is very often a convergent one, and met with in the species belonging to various genera of the generic group *Crambus* F. s. l. Because of this, in the group A are found species belonging to three genera *Crambus* F. s. str., *Agriphila* HBN. and *Catoptria* HBN. It should be mentioned here also that for the species *Crambus hortuellus* (HBN.) as well as for „*Crambus*“ *culmellus* (L.) PIERCE & METCALFE gave the drawing of the female genitalia of *Crambus hortuellus* (HBN.). As the last feature for group A PIERCE & METCALFE give the presence of one signum on bursa copulatrix of female genitalia. The number of signa is indeed one of the most important systematic features in the group *Crambus* F. s. l. In spite of this

PIERCE & METCALFE place in group A a species which has quite distinctly two signa, viz. *Crambus hortuellus* (HBN.) It might be assumed that this inadvertence happened because of a wrong preparation or a partial damage of the female genitalia of this species but PIERCE & METCALFE give the number of three investigated females of *Crambus hortuellus* (HBN.).

„Group B. *Platytes*, GN.

Platytes cerusellus, SCHIFF. [*Platytes* GUEN.]

Platytes alpinellus, HBN. [*Platytes* GUEN.]“

The joining together of these two species in one group is, I think, probably right; but I do not agree with their being placed among the species of the genus *Crambus* F. s. l. They present a quite different genus.

„Group C.

Crambus uliginosellus, Z. [*Crambus* F.]

Crambus ericellus, HB. [*Crambus* F.]

Crambus dumetellus HB. [*Crambus* F.]

Crambus perlellus, SCOP. [*Crambus* F.]

Crambus pratellus, L. [*Crambus* F.]

Crambus chrysonuchellus, SCOP. [*Thisanotia* HBN.]“

As the feature distinguishing the species of this group PIERCE & METCALFE give only the presence of two signa on bursa copulatrix. I think it right, with this restriction, however, that not all species of *Crambus* F. s. l. which have this feature can be placed in one group or genus. Also genus *Crambopsis* De LATTIN has this feature. I do not understand why PIERCE & METCALFE put in the group C the species „*Crambus*“ *chrysonuchellus* (SCOP.) the female of which has no signum at all on bursa copulatrix, a fact which the authors themselves admit.

„Group D.

Crambus fascelinellus, HB. [*Pediasia* HBN.]

Crambus poliellus, TR. [*Agriphila* HBN.]

Crambus hamellus, THNBG. [*Crambus* F.]

Crambus lithargyrellus, HB. [*Pediasia luteella* (DEN. & SCHIFF.)]

Crambus contaminellus, HB. [*Pediasia* HBN.]

Crambus salinellus, TUTT [*Pediasia* HBN.]

- Crambus craterellus*, SCOP. [*Chrysocrambus* gen. n.]
Crambus rorellus, L. [*Chrysocrambus cassentiniellus*
 Z.]
Crambus cornutellus, PIERCE [*Chrysocrambus* gen. n.]
Crambus dentuellus, PIERCE [*Chrysocrambus* gen. n.]
Crambus paludellus, HB. [*Calamotropha* HBN.]“

In this group were placed all these species which did not fall into the groups A, B and C. PIERCE & METCALFE call it a „mixed group“. Indeed, here are species belonging to various genera. It should be mentioned that the male genitalia of *Pediasia luteella* (DEN. & SCHIFF.) were given as belonging to the species „*Crambus*“ *lithargyrellus* (HBN.).

In my paper in 1951 I divided 50 Central European species of the genus *Crambus* F. s. l. according to the build of their genitalia into three subgenera *Agriphila* HBN., *Crambus* F. s. str. and *Calamotropha* ZELL. In a later paper (1953) I acknowledged these subgenera as distinct genera and excluded a distinct genus *Pediasia* HBN. from the group *Agriphila* HBN. Still later (1955) as mentioned above, I established the genus *Xanthocrambus* BLESZ. for the species of the group *Crambus delicatellus* ZELL., and excluded the genus *Catoptria* HBN. from the genus *Agriphila* HBN. (1956). At present, therefore, the genus *Crambus* F. s. l. is divided into the following genera:

- Crambus* F. s. str.
Crambopsis DE LATTIN
Agriphila HBN.
Catoptria HBN.
Pediasia HBN.
Xanthocrambus BLESZ.
Calamotropha ZELL.

Some of the mentioned genera contain groups of species little related to each other. Therefore these genera are not systematical units of equal rank. This causes a logical necessity to revise a larger group of species of the former genus *Crambus* F. s. l. and their formation into a new system. This system would surely be comparatively the best when based on the whole world material. Unfortunately, I see no possibility to dispose of such a material in the near future. My present inve-

stigations comprised about 190 Holarctic species and some Neotropical, Australian and South African species. Moreover, I know from descriptions in the literature many further species of the genus *Crambus* F. s. l. from the Palearctic, Nearctic, as well as New Zealand. In the present paper, based on all these materials, I accurately revised the species of the genus *Crambus* F. s. l. belonging to the European fauna. I disposed of 115 species, the mentioned fauna containing 121 species; the knowledge of the remaining six species was based on descriptions in the literature only.

As a result of this revision I divided the genera *Crambus* F. s. str. and *Agriphila* HBN. into several distinct genera, the other genera which were formed earlier out of the collective genus *Crambus* F. s. l. remained unchanged, i. e. *Catoptria* HBN., *Pediasia* HBN., *Calamotropa* ZELL., *Crambopsis* DE LATTIN, and *Xanthocrambus* BLESZ. Thus the former genus *Crambus* F. s. l. is divided at present into 12 distinct genera. Maybe this new system will be criticised as such division of genera into smaller ones may be thought unpractical or unnecessary; therefore I intend to explain the causes of my decision.

Generally speaking, the system of the *Lepidoptera* may be thought objectionable, as regards the division of separate families or subfamilies into genera, or the division of genera into species, and a further subdivision into smaller systematical units. In many cases this division has amateurish and unscientific character. We know perfectly well that the *Lepidoptera* are a group of animals which were much more often investigated by amateurs than by zoologists. This gave an individual appearance to the system of the *Lepidoptera* which is in many places naïve and based on similar features as the design and colouring of these animals. These features usually do not show specific relationships. There were also attempts to build a system based on the differences in wing venation; however, these systems most often have only a practical meaning, allowing a quick and easy determination of the genus of the insect. Of course, it is difficult to agree with a strictly practical notion of genera. A genus should comprise a group of species showing more or less strict affinity. Such grouping of species is often

very difficult and necessitates the use of large materials. A systematization of a group of *Lepidoptera* must be based on a complex of features, not on single features, as venation, colouring, or wing design of the animal. The investigation of the genitalia, a method very little developed until not long ago, allowed to rebuild the system of the *Lepidoptera* into a more sensible and a more scientific one. The genitalia seem to be organs much less plastic in evolution as well as subject to comparatively smaller individual fluctuations than the design and colouring of the *Lepidoptera*. Therefore the genitalia are more adapted to show interspecific affinities than other features may do. When taking into consideration the constitution of the genitalia, the wing venation, colouring and design, the morphology of the legs and palps, as well as biological, oecological and zoogeographical features, a revision of the system of the *Lepidoptera* may now be attempted. Many families and genera have been thus resystematized already. Some heterogeneous collective genera have been divided into several smaller distinct genera. Others, again, have been invalidated as having no reason to exist. Many species have been transferred from one genus to another.

In the groups of the so-called „*Microlepidoptera*“ comparatively more large heterogeneous collective genera may be found then in the so-called „*Macrolepidoptera*“ as *Geometridae* or *Noctuidae*. Such genera contain various groups of species not much related one to the other. *Crambus* F. s. l. is such a genus, as it contains several hundreds of species distributed over nearly the whole world. This genus was maybe even a polyphyletic group and was recognized on the base of a similar venation of the wings in the species belonging to it. When investigating the features distinguishing the genus *Crambus* F. s. l. from the related European genera I ascertained serious inaccuracies in the old system. Thus, in existing keys the species of the genus *Crambus* F. s. l. should differ from the species of the genus *Ancylolomia* HBN. as follows: in genus *Crambus* F. s. l. vein *r* on the fore wing runs alongside vein *sc* and is not connected with it, while in genus *Ancylolomia* HBN. these veins are connected by a short transversal. I investigated this feature in many species of the *Crambidae* and ascer-

tained that this connection of veins *r* and *sc* of the fore wing appears not only in the genus *Ancylolomia* HBN. but also in some species of the genus *Crambus* F. s. l., as for example *Crambus hortuellus* (HBN.), *C. pallidellus* DUP., *Metacrambus carectellus* (ZELL.), *Mesocrambus candiellus* (H.-S.) or *Agriphila culmella* (L.). I did not find any such connection in *Agriphila selusella* (HBN.) and *A. aeneociliella* (EVERS.), i. e. in species very nearly related to *A. culmella* (L.). Moreover, in *A. culmella* (L.) this feature is variable. Among some fifty specimens of *A. culmella* (L.) caught in one locality in the same time I found many specimens with the connection of veins *r* and *sc* on the fore wing as well as such without such a connection. This single fact may demonstrate the fragility of the foundations of the old system of *Crambidae*.

According to existing keys, such species as *Crambus hortuellus* (HBN.) or *Agriphila culmella* (L.) should be included into genus *Ancylolomia* HBN. which of course would have no sense. However, it does not result from these considerations that the connection of veins *r* and *sc* on the fore wing is a minor generic feature in *Ancylolomia* HBN. or that it is no generic feature at all for the latter. This feature becomes really inessential when taken without other generic features and only when taken in a complex of other features it acquires its proper value. In the species of the genus *Ancylolomia* HBN. as far as I could observe, the connection of veins *r* and *sc* on the fore wing is characteristic and constant. Again, in the species of the generic group *Crambus* F. this connection usually is not a generic feature, sometimes even not a specific feature, as in the case of *Agriphila culmella* (L.).

This example allows to stress a great caution when classifying single features as generic or specific ones. Further, it results unquestionably from this example that some feature often may not be treated in the same way for different groups of *Lepidoptera*. In one group a feature may serve as criterion of generic distinctness, in another it may not even be considered as a specific feature. Another such example is the appearance of ocelli or their lack in the species of the genus *Calamotropha* HBN. In *C. paludella* (HBN.) there are ocelli, again, in *C. aureliella* (F. R.) there are none. Doubtlessly

these two species, as shown by their genitalia, are very nearly related and it would be difficult to create distinct genera for them. In other groups the lack or appearance of ocelli may be a criterion of at least generic distinctness.

When building the system of the generic group *Crambus* F. s. l. I endeavoured to take these data into consideration. I created genera based on complexes of features. These genera seem to comprise groups distinctly related one to another and are phylogenetically distinctly distant one from another and there are no forms connecting them. As it usually happens when reviding any group of animals, here too, after the separation and inclusion of the more characteristic species into the created systematical units, some species remain suggesting serious doubt as to their systematical affinity. These species are forms differing so much from the principal genera of the *Crambidae*, that new distinct genera had to be established for them. These are for example *Mesocrambus candiellus* (H.-S.), *Metacrambus carectellus* (ZELL.) and *Neocrambus wolfschlägeri* (SCHAW.). It was difficult to include them into any of the formerly established genera as they differ strongly from the latter by the constitution of their genitalia as well as their habitus. I was in serious doubt also as to the position of *Crambus pallidellus* DUP.; the lack of females in my material unfortunately rendered a decision all the more difficult. The female genitalia give very important and sometimes decisive generic features. The inclusion of *Crambus pallidellus* DUP. into the genus *Crambus* F. s. str. may show to be erroneous. It is possible that a distinct genus should be formed for this species or it should be included into the genus *Metacrambus* gen. nov.

The features should still be shortly discussed which I considered when grouping the species into genera. The following details are important in the wing design (which is, in my opinion, a feature secondary as compared to the constitution of the genitalia or the wing venation): the presence of one or two bands on the fore wing, the direction of these bands, the appearance and outline of the basal stripe on the fore wing, the form of the outer margin of the fore wing. Thus it may be said for example that the species of the genus *Crambus* F. s. str. have at most one transverse band on the fore wing.

It is always angled in the upper half of the wing. It is silvery and bordered dark from the basal side of the wing. Nevertheless, some species of this genus happen to possess a design completely reduced, as *Crambus perlellus* (SCOP.) or *C. rostellus* LAH.

The form of frons is also an important feature. Many genera have only a more or less convex frons, again, for example in the species of the genus *Agriphila* HBN. frons is very often strongly conical, pointed.

These examples are a further corroboration of my former consideration; namely, I asserted that a feature may be taken as generic in some genus, in another only as a specific one. Most of the species of the generic group *Crambus* F. s. l. may be determined as belonging to some genus by its external features, however, in some cases the examination of the male or female genitalia is indispensable. The more important features in the male genitalia are: the presence of the lateral or dorsal process on valva, the presence and sometimes also the form and degree of sclerotization of pars basalis (a dorsal process of valva), sometimes the comparative length of uncus to the length of gnathos. In females the number and form of signa on bursa copulatrix are a very important feature as well as the form of labia. Here too, as in the case of external features, some features are generic in one genus and only specific in another. For example in the species of the genus *Calamotropha* HBN. signum is either present or absent; again, in the species of the genus *Crambus* F. s. str. always two signa, in the species of the genera *Pediasia* HBN. or *Xanthocrambus* BLESZ. always no signum.

The systematics of the European species of the generic group *Crambus* F. s. l. takes the following outline in my arrangement:

Genus *Crambus* FABRICIUS, 1798

Typus generis: *Phalaena Tinea pascuella* LINNAEUS

1. *Crambus pascuellus* (L.)
2. *Crambus silvellus* (HBN.)
3. *Crambus uliginosellus* ZELL.
4. *Crambus ericellus* (HBN.)

5. *Crambus alienellus* (GERM. & ZINCK.)
6. *Crambus heringiellus* H.-S.
7. *Crambus hamellus* (THNBG.)
8. *Crambus dumetellus* (HBN.)
9. *Crambus pratellus* (L.)
10. *Crambus palustrellus* RAG.
11. *Crambus perlellus* (SCOP.)
12. *Crambus rostellus* LAH.
13. *Crambus hortuellus* (HBN.)
14. *Crambus pallidellus* DUP.
15. *Crambus mendizabali* AGENJO

Genus *Crambopsis* DE LATTIN, 1952

Typus generis: *Crambus malacellus* DUPONCHEL

1. *Crambopsis malacellus* (DUP.)

Genus *Mesocrambus* gen. nov.

Typus generis: *Crambus candiellus* H.-S.

1. *Mesocrambus candiellus* (H.-S.)

Genus *Metacrambus* gen. nov.

Typus generis: *Crambus carectellus* ZELLER

1. *Metacrambus carectellus* (ZELL.)

Genus *Agriphila* HÜBNER, 1825

Typus generis: *Tinea deliella* HÜBNER

1. *Agriphila deliella* (HBN.)
2. *Agriphila selasella* (HBN.)
3. *Agriphila aeneociliella* (EVERS.)
4. *Agriphila culmella* (L.)
5. *Agriphila tristella* (DEN. & SCHIFF.)
6. *Agriphila osseella* (HMPS.)
7. *Agriphila paleatella* (ZELL.)

8. *Agriphila inquinatella* (DEN. & SCHIFF.)
9. *Agriphila brioniella* (ZERNY)
10. *Agriphila nebrodella* (ZERNY)
11. *Agriphila vallicolella* (COSTA)
12. *Agriphila latistria* (HAW.)
13. *Agriphila poliella* (TREITSCH.)
14. *Agriphila cyrenaicella* (RAG.)
15. *Agriphila graphella* (CONST.)
16. *Agriphila hungarica* (SCHMIDT)
17. *Agriphila tersella* (LED.)
18. *Agriphila trabeatella* (H.-S.)
19. *Agriphila biarmica* (TNGSTR.)
20. *Agriphila geniculea* (HAW.)
21. *Agriphila tolli* (BLESZ.)
22. *Agriphila dalmatinella* (HMPS.)

Genus *Catoptria* HÜBNER, 1825

Typus generis: *Crambus permutatellus* H.-S.

1. *Catoptria radiella* (HBN.)
2. *Catoptria intermediella* (M.-R.)
3. *Catoptria bolivari* (AGENJO)
4. *Catoptria pauperella* (TREITSCH.)
5. *Catoptria conchella* (DEN. & SCHIFF.)
6. *Catoptria permutatella* (H.-S.)
7. *Catoptria gozmányi* BLESZ.
8. *Catoptria myella* (HBN.)
9. *Catoptria osthelderi* (DE LATTIN)
10. *Catoptria specularis* HBN.
11. *Catoptria pyramidella* (TREITSCH.)
12. *Catoptria spatulella* (TRTL.)
13. *Catoptria luctiferella* (HBN.)
14. *Catoptria luctuella* (H.-S.)
15. *Catoptria acutangulella* (H.-S.)
16. *Catoptria mytilella* (HBN.)
17. *Catoptria aetnella* (ZERNY)
18. *Catoptria caucasica* (ALPH.)
19. *Catoptria pinella* (L.)

20. *Catoptria vilarrubiae* (AGENJO)
21. *Catoptria corsicella* (DUP.)
22. *Catoptria permiaca* (PET.)
23. *Catoptria margaritella* (DEN. & SCHIFF.)
24. *Catoptria furcatella* (ZETT.)
25. *Catoptria maculalis* (ZETT.)
26. *Catoptria zermattensis* (FREY)
27. *Catoptria müller-rutzi* (WEHRLI)
28. *Catoptria languidella* (ZELL.)
29. *Catoptria digitella* (H.-S.)
30. *Catoptria hospitali* (AGENJO)
31. *Catoptria pseudociliciella* sp. n.
32. *Catoptria laevigatella* (LED.)
33. *Catoptria fulgidella* (HBN.)
34. *Catoptria confusella* (STGR.)
35. *Catoptria incertella* (H.-S.)
36. *Catoptria staudingeri* (ZELL.)
37. *Catoptria falsella* (DEN. & SCHIFF.)
38. *Catoptria verella* (GERM. & ZINCK.)
39. *Catoptria coulouella* (DUP.)
40. *Catoptria combinella* (DEN. & SCHIFF.)
41. *Catoptria orientella* (H.-S.)
42. *Catoptria biformella* (REBEL)
43. *Catoptria lythargyrella* (HBN.)

Genus *Pediasia* HÜBNER, 1825

Typus generis: *Tinea fascelinella* HÜBNER

1. *Pediasia pedriolella* (DUP.)
2. *Pediasia jucundella* (H.-S.)
3. *Pediasia sareptella* BLESZ.
4. *Pediasia saisanella* BLESZ.
5. *Pediasia adamczewskii* BLESZ.
6. *Pediasia fascelinella* (HBN.)
7. *Pediasia luteella* (DEN. & SCHIFF.)
8. *Pediasia epineura* (MEYR.)
9. *Pediasia pectinicornis* (REBEL)
10. *Pediasia soffneri* BLESZ.

11. *Pediasia subflavella* (DUP.)
12. *Pediasia pudibundella* (H.-S.)
13. *Pediasia hübnerei* BLESZ.
14. *Pediasia uhryki* (ROTSCH.)
15. *Pediasia truncatella* (ZETT.)
16. *Pediasia squalidalis* HBN.
17. *Pediasia monotona* (FIL.)
18. *Pediasia contaminella* (HBN.)
19. *Pediasia escalerella* (SCHMIDT.)
20. *Pediasia hispanica* BLESZ.
21. *Pediasia steppicolella* (ZERNY)
22. *Pediasia matricella* (TREITSCH.)
23. *Pediasia bolivarella* (SCHMIDT)
24. *Pediasia desertella* (LED.)
25. *Pediasia siculella* (DUP.)

Genus *Thisanotia* HÜBNER, 1825

Typus generis: *Phalaena chrysonuchella* SCOPOLI

1. *Thisanotia chrysonuchella* (SCOP.)
2. *Thisanotia lucella* (H.-S.)

Genus *Chrysocrambus* gen. n.

Typus generis: *Crambus cassentiniellus* ZELLER

Subgenus *Chrysocrambus* subg. n.

Typus subgeneris *Crambus cassentiniellus* ZELLER

1. *Chrysocrambus cassentiniellus* (ZELL.)
2. *Chrysocrambus sardiniellus* (TRTI.)
3. *Chrysocrambus cornutellus* (PIERCE & MET.)
4. *Chrysocrambus dentuellus* (PIERCE & MET.)

Subgenus *Chrysocramboides* subgen. n.

Typus subgeneris *Phalaena craterella* SCOPOLI

1. *Chrysocramboides craterellus* (SCOP.)

Genus *Xanthocrambus* BLESZYŃSKI, 1955**Typus generis: *Crambus delicatellus* ZELLER**

1. *Xanthocrambus delicatellus* (ZELL.)
2. *Xanthocrambus occidentellus* (CAR.)
3. *Xanthocrambus saxonellus* (GERM. & ZINCK.)

Genus *Neocrambus* gen. n.**Typus generis: *Crambus wolfschlägeri* SCHAWERDA**

1. *Neocrambus wolfschlägeri* (SCHAW.)

Genus *Calamotropha* ZELLER, 1863**Typus generis: *Tinea paludella* HÜBNER**

1. *Calamotropha paludella* (HBN.)
2. *Calamotropha aureliella* (F. R.)

It is very difficult or even quite impossible to answer the question how the genera established by me are related to each other. May be that they present parallel evolutionary lines. Their arrangement on the basis of accessible investigation means is a rather subjective one because it is very difficult to assume any hypotheses of their phylogenetic priority. I have placed the genus *Crambus* F. s. str. at the beginning because its species are conservative and do not show great variability. Besides, these species are in almost all cases very strongly separated. These features might mean that it is a group phylogenetically prior to such genera as *Agriphila* HBN., *Catoptria* HBN. or *Pediasia* HBN. The position of such genera as *Xanthocrambus* BLESZ., *Neocrambus* gen. n., *Thisanotia* HBN. or *Chrysocrambus* gen. n. is not clear enough for me and therefore I place them at the end. The intrageneric systematics will be discussed in detail with each genus. Here I should like to present the relations existing in separate groups and the interspecific taxonomy.

These questions are in connection with the problem of

the criterion of specific distinctness. As I mentioned earlier, it is possible to distinguish groups of species usually not very numerous, closely related and similar to each other. Inside such groups there often exist some subgroups consisting mainly of pairs of species very closely related in genitalia or habitus or else in genitalia and habitus. These species are as if being „twin-like“. In many cases these species are so similar that it is difficult to state whether they are distinct ones or only subspecies of one species. Several categories of such „twin-like“ species may be distinguished. The first category could be represented by species externally delusively similar but differing distinctly by their genitalia. I can give here as examples such pairs of species as *Agriphila geniculea* (HAW.) and *Agriphila tolli* (BLESZ.), *Catoptria pinella* (L.) and *Catoptria permiaca* (PET.), *Catoptria pyramidella* (TREITSCH.) and *Catoptria spatulella* (TRTL.), *Catoptria zermattensis* (FREY) and *Catoptria müller-rutzi* (WEHRLI), *Pediasia jucundella* (H.-S.) and *Pediasia fascelinella* (HBN.), *Pediasia contaminella* (HBN.) and *Pediasia hispanica* BLESZ., *Chrysocrambus cassentiniellus* (ZELL.) and *Chrysocrambus craterellus* (SCOP.). The group *Catoptria permutatella* (H.-S.) should be treated as an exceptional case. Such species as *Catoptria permutatella* (H.-S.), *C. gozmányi* BLESZ., *C. myella* (HBN.), *C. osthelderi* (DE LATTIN) belong here. All these species are undistinguishable by their external features but have essential differences in the build of male as well as female genitalia. Another category, contrary to the first, is formed by the species distinctly different externally but delusively similar in the structure of their genitalia. Such pairs of species belong here as *Agriphila culmella* (L.), and *Agriphila aeneociliella* (EVERS.), *Agriphila tersella* (LED.) and *Agriphila graphella* (CONST.), *Agriphila vallicolella* (COSTA) and *Agriphila latistria* (HAW.), *Agriphila tristella* (DEN. & SCHIFF.) and *Agriphila osseella* (HMPS.), *Agriphila tristella* (DEN. & SCHIFF.) and *Agriphila inquinatella* (DEN. & SCHIFF.), *Catoptria pyramidella* (TREITSCH.) and *Catoptria specularis* HBN., *Catoptria pinella* (L.) and *Catoptria corsicella* (DUP.). In this case too, peculiar pairs of species may be distinguished which do not show any differences in male or female or else male and female genitalia. For example *Catoptria mytilella*

(HBN.) and *Catoptria actnella* (ZERNY), females of *Agriphila inquinatella* (DEN. & SCHIFF.), *Agriphila tristella* (DEN. & SCHIFF.) and *Agriphila brioniella* (ZERNY), males of *Pediasia fascelinella* (HBN.) and *Pediasia luteella* (DEN. & SCHIFF.) and many others. Sometimes species belonging to different groups show great external similarity as for example *Crambus uliginosellus* ZELL., *Crambus pascuellus* (L.) and *Crambus silvellus* (HBN.). In such cases it is not known whether the design and colour of the insect show a far advanced conservatism or whether this similarity is due to convergency. The design and external coloration sometimes show a strong conservatism, as may be affirmed in the case of the group *Catoptria permutatella* (H.-S.). As I mentioned earlier, several species of this group do not show any external differences in spite of essential differences in the structure of their genitalia. In this case the external similarity certainly is not a convergent feature because the genitalia of the species, despite great differences, retained a complex of features so characteristic for the group that it is difficult to treat them as little related with each other. It is much more complicated to establish the line dividing the species which show small external as well as genital differences. In some cases it is impossible to distinguish whether we deal with distinct species or subspecies. A typical example is given by *Agriphila latistria* (HAW.) and *Agriphila monotaeniella* (H.-S.). One of the most important criterions of specific distinctness of the species of the genus *Agriphila* HBN. is the number and size of cornuti in the male aedeagus. When there are no such differences in individual species we can generally detect essential differences in the external appearance, so that there is no doubt that we deal with two separate species. Thus for example I did not observe any differences in the shape and number of cornuti in *Agriphila paleatella* (ZELL.), *Agriphila brioniella* (ZERNY), *Agriphila latistria* (HAW.) and *Agriphila vallicolella* (COSTA), but nevertheless it is evident that these are pairs of species very distinctly separated from each other. This problem is very difficult to solve in the case of *Agriphila latistria* (HAW.) and *Agriphila monotaeniella* (H.-S.). These forms were thus far considered by all authors as separate species. While investigating the features on the

base of which these species are distinguished I stated, however, that these features vary. *Agriphila monotaeniella* (H.-S.) shows only always a somewhat smaller alar expanse. I think, however, that this feature does not justify the treatment of these forms as separate species. Other features in the build of the genitalia are variable in this group and it is impossible to state anything on this basis. In such cases biological investigation might solve this problem. It is not impossible that such forms are species indeed but we may not recognize them as such on the basis of the usual criterions of specific distinctness. What is more, in such a group there may be many more species than we may suppose, but the differences being unobservable for us, slip our attention. Such a problem must be put temporarily „ad acta“ and must wait untill some new taxonomic features will be found. Such cases are met with not only in the species of the genus *Agriphila* HBN. but in other genera as well. As an example I will give some species of the genus *Catoptria* HBN., such as *Catoptria mytilella* (HBN.) and *Catoptria aetnella* (ZERNY) or *Catoptria radiella* (HBN.) and *Catoptria intermediella* (M.-R.). In the first as well as in the second case I did not find any genital differences between these species. Externally they differ distinctly. *Catoptria mytilella* (HBN.) occurs on the Continent of Europe, while *Catoptria aetnella* (ZERNY), in Sicilia. Because they show great external differences I recognized these insects as species but I cannot state it with absolute certainty. In the second case *Catoptria radiella* (HBN.) is distributed in the Alps and Tatry Mts. while *Catoptria intermediella* (M.-R.) occurs only in Alpes Maritimes and the Apennines. Here I recognized these forms also as species because of a certain analogy. *Catoptria pinella* (L.), a continental species, and *Catoptria corsicella* (DUP.), a Corsican species, do not show any considerable differences in genitalia while they differ distinctly in the design of the wings. It is therefore impossible to state that they are only geographical races. Somewhat similar conditions occur between *Catoptria mytilella* (HBN.) and *Catoptria dimorphella* (STGR.). I did not investigate the females in this case but the male genitalia do not show any differences. There appear very strong differences in the wing design similarly as between *Catoptria pinella*

(L.) and *Catoptria corsicella* (DUP.). This shows that in the genus *Catoptria* HBN. there occur pairs of species with no genital differences. On this basis it may be assumed that in cases of *Catoptria mytilella* (HBN.) and *Catoptria aetnella* (ZERNY) or *Catoptria radiella* (HBN.) and *Catoptria intermedia* (M.-R.) we deal with separate species and not with geographical races. In the genus *Pediasia* HBN. we know many cases in which the male genitalia do not show any specific differences which, however, are met with in the female ones. An interesting case can be found in the genus *Crambus* F. s. str. Two species, *Crambus perlellus* (SCOP.) and *Crambus rostellus* LAH., are recognized by some authors as merely races. Thus far no differences were found in the female genitalia and the male ones are considered also as identical. Recently I have detected some differences in the male genitalia of these species but only after the investigation of large series of males it will be possible to say anything certain. *Crambus perlellus* (SCOP.) is a Palearctic species distributed in mountains as well as in lowlands. *Crambus rostellus* LAH. on the other hand is a high-alpine element occurring in the mountains of Europe and Asia. These two species show rather great differences in the shape, coloration, and expanse of the wings. It should be mentioned that the distribution of *Crambus perlellus* (SCOP.) and *Crambus rostellus* LAH. in montane regions is not similar. For example, *Crambus rostellus* LAH. in spite of a thorough search was not found in the Tatry Mts. while *Crambus perlellus* (SCOP.) appears there to 1500 m. MÜLLER-RUTZ (1923) described a high montane alpine race of *Crambus perlellus* (SCOP.) from the Alps which has a similar coloration to *Crambus rostellus* LAH. and named it *Crambus perlellus* (SCOP.) subsp. *pseudo-rostellus* M.-R. This form shows the same shape of the wings as *Crambus perlellus* (SCOP.). This leads to the assumption that *Crambus perlellus* (SCOP.) and *Crambus rostellus* LAH. are separate species although the species of the genus *Crambus* F. s. str. usually have, except a few exceptions, extraordinarily different genitalia.

Summing up, it should be stated that it is difficult to set inflexible criterions of specific distinctness for individual groups. Sometimes the specific distinctness may be ascertained

by zoogeographical means or by some analogies. It should be remembered, however, that each species may be separate for itself and should be considered in such way.

Intraspecific taxonomy

It is a very difficult problem and in several cases the decision is very subjective and depends on the point of view of the individual author. In earlier times such terms were used as „species“, race — „varietas“ and „aberratio“. Those terms, however, were sometimes erroneously interpreted because in some publications the terms *varietas* and *aberratio* were given for the same forms. If we mean geographical race as *varietas*, it is doubtful that this race should occur in the area of the typical form as *aberratio*.

In recent times several new terms were introduced and those were variously interpreted by various authors. I will not quote examples here because I do not aim at present to solve the problem. I only wish to explain in what manner I shall interpret the individual terms in the course of this paper. It should be only mentioned that recently, besides the terms *varietas* and *aberratio*, such terms were used as subspecies, *modificatio*, *forma*, superspecies (or ultraspecies), semispecies. It is evident that similarly as the intrageneric taxonomy was extended as the result of the progress of scientific systematics, the intraspecific taxonomy is in progress, too. It should be stated however, that the latter is a much more difficult sphere than the intrageneric systems. Juggling with such terms as superspecies or semispecies is very dangerous and may easily lead to misunderstanding, especially when the application of these terms is the result of laboratory investigation of not living (dead) material. In the present state of the knowledge of species, many problems concerning the specific integrity can be solved only and exclusively by means of biological investigations. Dead specimens, dry, apparently identical, may represent separate species and the differences between them may be of a biological nature. The application of the terms superspecies and semispecies sometimes leads to inconsequences. In order not to involve myself into evolu-

tional speculations I maintain only three terms connected with intraspecific taxonomy: 1) subspecies — a geographical form confined to a particular region. The population may include the intermediate specimens but its overwhelming majority is distinctly different from the typical form; 2) modificatio — an ecological race occurring as a great majority of specimens of the population in regions ecologically similar; 3) aberratio — it is a form sporadically repeated among typical specimens in a part or in the whole area of the typical form. The term „form“ I use when I am not sure if I have to do with a subspecies, modificatio or aberratio.

Morphology

The species of the genus *Crambus* F. s. l. are moths with long and narrow fore wings and relatively wide fan-like hind wings. Maxillar palps always long, several times longer than the diameter of the eye. Labial palps well developed, triangular. Proboscis well developed, except in the species of the genus *Calamotropha* HBN. in which it is atrophied. On the hind legs are two pairs of spurs, the legs of the second pair have one pair of spurs. Fore wing usually have a design consisting of a longitudinal light-coloured stripe, transverse bands, palings running alongside veins, dark dots on termen. A light-coloured stripe appears in the species of such genera as *Crambus* F. s. str., *Agriphila* HBN., *Crambopsis* DE LATTIN, *Catoptria* HBN., *Thisanotia* HBN. and *Mesocrambus* gen. n. The species of the genus *Crambus* F. s. str. have generally this stripe reaching to $\frac{2}{3}$ of the length of the wing, prolonged further on by a similarly coloured spot. In the species with the basal stripe on the fore wing there always occurs a sharply delineated outer band. The basal stripe in these species is usually white, sometimes in aberrative specimens it is darkened. The basal stripe is longest in some species of the genus *Agriphila* HBN. and *Catoptria* HBN. In the species of *Catoptria* HBN. the stripe is often divided into two or three parts. In such cases I use the following terms: proper basal stripe and spots prolonging it. Transverse bands are the most often appearing

element of the design of species of the generic group *Crambus* F. The number of these bands is one or two and is sometimes a generic feature. Thus the species of the genus *Crambus* F. s. str. have usually only the outer band while the species of the genus *Pediasia* HBN. have always two bands — the outer and inner or central one. The species with the design in the shape of irregular spots and these without the design are generally exceptional. The species without design are *Crambus perlellus* (SCOP.), *Crambus rostellus* LAH., *Catoptria languidella* (ZELL.), *Neocrambus wolfschlägeri* (SCHAW.). In some of them, however, there appears sometimes such design as the darkening on the veins. There are more species in which the reduction of the design occurs as an individual fluctuation; such species belong here as *Crambus hortuellus* (HBN.), *Agriphila inquinatella* (DEN. & SCHIFF.), and others. The next very common element of the design of the fore wings of the species of the generic group *Crambus* F. s. l. are dark dots occurring at the outer margin. Generally the dots in the lower part of the outer margin are developed best; in the upper part they are either absent or reduced. The hind wings of species of the generic group *Crambus* F. s. l. are generally without design. There appear sometimes only darkenings running alongside the margins, which make the impression of traces of a band and palings in the base of the wing. Cilia of the hind wings are very often coloured visibly paler than the ground of the wing.

In the venation of the fore wing there appear five branches of vein r . The first of them is sometimes merged with the vein sc similarly as in the genus *Ancylolomia* HBN. but in most cases it reaches costa freely. Vein r_3 sometimes is reduced. Vein r_5 goes with r_4 beyond median cell, while in the genus *Platytes* GUEN. this vein comes out of the median cell. On the hind wings the body of the vein m merged with the vein cu gives four branches while in the species of the genus *Platytes* GUEN. there are three of these branches.

Morphology of the genitalia. Together with the discussion of this problem I want to establish an unalterable terminology of the individual parts of the genitalia in order to refer to them uniformly in future. In Part I of my Studies (1951) I have overlooked this quite unnecessarily and this might, in some cases, lead

the readers into error. In the mentioned paper, as far as the male genitalia are concerned, I have divided them as follows: uncus, gnathos, tegumen, saccus, valva, pars basalis (dorsal process of valva), other processes of valva, anellus, aedeagus, vesica, cornuti. In the females I distinguished the following parts: labia, gonapophyses anteriores, lamella subgenitalis, gonapophyses posteriores, ostium bursae, ductus bursae, bursa copulatrix, signa.

The terminology of the male genitalia presents considerable difficulties. In the male, as well as in the female the genitalia are the transformed tergites and sternites of the 9—10 or 8—10 segments of the abdomen. The 9th tergite is the tegumen (or subscaphium), the 10th tergite and sternite developed in the shape of tongs consists of the dorsal part, uncus (tergite) and ventral one — gnathos (sternite). The 9th sternite is the saccus (or vinculum). The 9th sternite has two usually symmetrical processes-valvae. PIERCE & METCALFE divided the valva into three parts: 1) costa, the dorsal part, 2) sacculus, the ventral part, and 3) valvula, the terminal part of valva, feebly sclerotized.

The morphology of valva in *Crambidae* is the following: The distinct anatomical separation of sacculus from valva appears in only a few species and exclusively in those belonging to the genus *Crambus* F. s. str. Besides there rare cases this separation does not occur and beside a somewhat greater sclerotization appearing sometimes, this problematic sacculus is not distinguished from the rest of the valva. This is especially evident in all species of the genus *Agriphila* HBN. and *Pediasia* HBN. To solve this question it is necessary to discuss in detail the morphology of the valva. Apparently originally valva was a uniform, not differentiated organ. This is visible in such species as *Chrysocrambus cassentiniellus* (ZELL.) [pl. XLVIII, fig. 6] and related ones. Of course I do not assert that these species are the primary ones for the generic group *Crambus* F. in general because there might appear a secondary simplification of valva. In these species valva appears as an empty pocket opened at its base. It does not show any differentiations. The next stage of the differentiation of valva is found in the species of the genus *Agriphila* HBN. There appear on the basal part of valva secondary little dorsal pockets.

These pockets have the shape of short finger-like processes, with somewhat more sclerotized walls than the rest of valva. Simultaneously membrana valvae interna (the inner wall of the valva) is somewhat more strongly built at the base of the ventral part. These pockets are more or less strongly list-like separated from the valva at their outer part. The development of these processes which I discuss under the name *pars basalis* went in various directions. Here two main directions may be distinguished: 1) the growing in the horizontal direction, 2) the growing in the perpendicular one. As the result of the first variation processes developed, having finger-like or hook-like shapes and reaching sometimes enormous dimensions, as for example in the species *Pediasia fascelinella* (HBN.) and related ones [pl. XLIII—XLV], *Catoptria myella* (HBN.) and related ones [pl. XXXVII—XXXVIII], *Crambus hamellus* (THNBG.) [pl. XXVIII, fig. 4], or *Crambus pascuellus* (L.) [pl. XXVII, fig. 1]. The second direction of development of *pars basalis*, that is its development in the perpendicular direction is somewhat less represented. I found it mainly in the species of the genus *Catoptria* HBN. such as *Catoptria margaritella* (DEN. & SCHIFF.), *C. furcatella* (ZETT.), *C. pinella* (L.) and others [pl. XXXVIII—XLI]. We may also present the species showing a combination of both these directions such as for example *Catoptria combinella* (DEN. & SCHIFF.), *C. coulourella* (DUP.), *C. digitella* (H.-S.), *C. laevigatella* (LED.) etc. [pl. XL, XLII]. In many species of the genus *Crambus* F. s. str. *pars basalis* has not the typical form of a process but appears in the shape of various folds as in *Crambus alienellus* (GERM. & ZINCK.), *C. ericellus* (HBN.), *C. uliginosellus* (ZELL.) [pl. XXVII, figs. 2, 4, 5], *C. hortuellus* (HBN.) [pl. XXIX, fig. 4], or *Crambus palustrellus* RAG. [pl. XXVIII, fig. 5]. Sometimes dorsal thickenings appear at the base of valva, the homology of which with *pars basalis* is doubtful. This takes place for example in *Crambus silvellus* (HBN.) [pl. XXVII, fig. 3], or *Calamotropha paludella* (HBN.) [pl. XLVII, fig. 5]. In some species of the genus *Crambus* F. s. str. *pars basalis* does not appear at all, although the whole genitalia is strongly differentiated [e. g. *Crambus pratellus* (L.) [pl. XXVIII, fig. 1]. Finally it should be mentioned that sometimes *pars*

basalis has secondary processes. These may be variously situated in relation to pars basalis. In *Pediasia truncatella* (ZETT.) [pl. XLVII, fig. 1] a secondary prong appears at the base of pars basalis, similarly as in several Nearctic forms related to this species. Another situation of the secondary process on pars basalis is found in such species as *Pediasia matricella* (TREITSCH.), *P. bolivarella* (SCHMIDT), and *P. desertella* (LED.) [pl. XLVI, fig. 3—5]. In these species this process is at the end of pars basalis, which in these cases is almost wholly accreted to valva. Sometimes the secondary process on pars basalis appears as a fold, as in *Catoptria coulourella* (DUP.) [pl. XLII, fig. 3]. A further differentiation of pars basalis is caused by its various processes situated laterally or ventrally. Because these are situated diversely I do not name them with one term. The most often met with is a process appearing in almost all species of the genus *Catoptria* HBN. It is situated near the base of valva on its inner side [pl. XL—XLI]. A somewhat other character is shown by the process of *Crambus uliginosellus* (ZELL.) [pl. XXVII, fig. 2] and *Crambus heringiellus* (H.-S.) [pl. XXVIII, fig. 3]. Here it appears as the termination of the fold of valva, situated ventrally, near the end of valva. Still another example is given by the ventral processes of valva at *Crambus dumetellus* (HBN.) [pl. XXVIII, fig. 2], or *Thisanotia chrysonuchella* (SCOP.) [pl. XLVII, fig. 3]. A similar process as that of the species belonging to the genus *Catoptria* HBN. is found also in *Crambus hamellus* (THNBG.) [pl. XXVIII, fig. 5]. I think this is a convergent feature, for the relation between this species and the species of the genus *Catoptria* HBN. is very doubtful.

After discussing all types of processes appearing on valva I can attempt to solve definitely the question of the term sacculus. We may observe that valvae in different species of the genus *Crambus* F. s. str. have the tendency to be strongly sclerotized from the base toward the apex. This strong sclerotization very rarely extends on the whole valva, till the apex. I have observed it only in *Crambus silvellus* (HBN.) [pl. XXVII, fig. 3] and *Neocrambus wolfschlägeri* (SCHAW.) [pl. XXXIV, fig. 6]. In these cases valva is wholly and uniformly strongly sclerotized. In the preponderant number of

cases only the basal part, the outer, or inner wall, is sclerotized. Previously (1951) under the term *sacculus* I included the strongly sclerotized part of valva. This, however, is wrong, because in this way under one term once we mean the outer and another time the inner wall of the valva. Besides, as I mentioned above, only very rarely we can find that anatomical separation of the stronger sclerotized part of valva. In most cases this sclerotization goes over into a membranous part in a continuous way. This proves also that the present use of the term *sacculus* is quite wrong. The term *sacculus* might be eventually accepted for the strongly sclerotized fold, appearing on the inner side of the ventral edge of valva. This fold, however, appears only in a few species, such as *C. pratellus* (L.), *C. dumetellus* (HBN.), *C. palustrellus* RAG. [pl. XXVIII, figs. 1, 2, 5], *C. perllellus* (SCOP.) or *C. rostellus* LAH. [pl. XXIX, figs. 1, 2]. Therefore I think that it is necessary to introduce a special term. Summing up, I intend not to use the term *sacculus* further on in the description of genitalia. For the parts which I previously named *sacculus* I will give individual descriptions.

The outer as well as the inner side of valva is hairy. Because in this hairiness I did not find any systematic values I have neglected it in the drawings. It should be mentioned here, however, that the hairs on *pars basalis* are not numerous, stronger and much longer than on the membranous parts of valva. Other process on valva as well as the basal and strongly sclerotized parts have no hairs.

Saccus is the transformed 9th sternite of the abdomen. Its long ventral edge is a feature very characteristic for the species of the generic group *Crambus* F. s.l. It is accreted on its whole length which prevents the spreading out of genitalia without the danger of their disfigurement. This feature appears in the least extent in the species of the genus *Agriphila* HBN. which usually have a narrow saccus. The shape of saccus is variable, but in the species related it does not deviate from a given norm. In the species of the genus *Agriphila* HBN. it is narrow in most cases. The genera *Catoptria* HBN. and *Pediasia* HBN. are characteristic by the presence of a more or less oval saccus, distinctly wider than that of the genus

Agriphila HBN. A round saccus is met with often in the species of the genus *Crambus* F. s. str. The species of the group *Catoptria coultonella* (DUP.) have saccus very elongated in horizontal direction and not in the perpendicular one as it is in the species of the genus *Agriphila* HBN. The edges of saccus have a tendency to a list-like thickening.

Tegumen is narrow and generally maintains a uniform character. A wide one is only rarely met with [e. g. *Pediasia contaminella* (HBN.) pl. LXXVII, fig. 5]. Sometimes the fore edges of the tegumen have a wide, membraneous accretion, as for example in some species of the genus *Crambus* F. s. str., as *Crambus uliginosellus* (ZELL.) [pl. LIX, fig. 2]. In most cases the edges of tegumen have list-like thickenings.

Uncus and gnathos are almost always very well developed as catching tongs. Uncus is generally as long as gnathos, but sometimes uncus longer than gnathos is found, e. g. in *Calamotropha paludella* (HBN.), *C. aureliella* (F. R.) [pl. XLVII, fig. 4, 5]. On the contrary, such species as for example *Crambus uliginosellus* (ZELL.), *C. pascuellus* (L.), *C. silvellus* (HBN.), [pl. XXVII, figs. 1, 2, 3] or *Crambus perlentus* (SCOP.) [pl. XXIX, fig. 1] have gnathos longer than uncus. Generally uncus is pointed, with a delicate hook at its end. The species *Crambus pascuellus* (L.) has an interesting shape of uncus. It consists of two separate pieces. They are covered with long strong bristles, while uncus is normally hairy. Such a bristled uncus, but much shorter, appears also in the species *Metacrambus caretellus* ZELL. [pl. XXIX, fig. 6]. Gnathos is terminated generally club- or hook-like. A club-like termination is especially characteristic for species of the genus *Agriphila* HBN. [pl. XXX—XXXIII], besides, it is often found in the species of the genus *Catoptria* HBN. and more rarely in the genus *Crambus* F. s. str. All European species closely related to *Pediasia fascelinella* (HBN.) and *Catoptria myella* (HBN.) have gnathos terminated by a hook. Other species of the generic group *Crambus* F. s. l. have this termination more or less roundish or pointed. The gnathos of the species *Crambopsis malacellus* (DUP.) has an interesting shape; it is strongly reduced and transformed into a ring surrounding uncus at its base. In all cases gnathos is hairy.

Aedeagus is a tube-like organ, in all cases distinctly elongated. Its length in relation to the whole genitalia is variable. The longest aedeagus is found in *Pediasia fascelinella* (HBN.), *P. luteella* (DEN. & SCHIFF.) [pl. XLVI, fig. 1, 2] and *Crambus heringiellus* (H.-S.) [pl. XXVIII, fig. 3] in which cases it reaches the length of the whole copulatory apparatus. Aedeagus is often armed with a thorn. A delicate thorn situated ventrally near the end of aedeagus is a feature characteristic for species of the genus *Agriphila* HBN. Considerably stronger thorns on the end of aedeagus are found in *Catoptria fulgidella* (HBN.) [pl. XXXIX, fig. 1], *Neocrambus wolfschlägeri* (SCHAW.) [pl. XXXIV, fig. 6], or *Crambus dumetellus* (HBN.) [pl. XXVIII, fig. 2]. Sometimes this feature is accompanied by a strong chitinous strengthening; this occurs in *Catoptria margaritella* (DEN. & SCHIFF.) [pl. XXXVIII, fig. 4]. Through aedeagus goes vesica (a slightly sclerotized duct) in which twofold differentiations may occur, that is cornuti and terminating prongs. The function of cornuti is still unknown. Some German authors call them „Liebesdörnen“. They occur in various numbers from one to over 100. A single cornutus appears in many species of the genera *Pediasia* HBN., *Crambus* F. s. str., *Catoptria* HBN. They are always narrowing toward the end, pointed. Several cornuti are found in many species of the genera *Agriphila* HBN., *Calamotropha* ZELL. In many cases the shape and number of cornuti give a systematic feature extremely important for establishing of specific features and distinction of the forms more difficult in this respect. The number of cornuti varies sometimes with the age of the moth for they often fall out after copulation. The terminating prongs are a second form of differentiations of vesica. They are always single and confined to not numerous species. I have found them in species of the genus *Pediasia* HBN. (II Section) [pl. XLVI, fig. 3—5], in *Crambus pratellus* (L.), *C. heringiellus* (H.-S.) [pl. XXVIII, fig. 1, 3], *Thisanotia chrysonuchella* (Scop.) and *T. lucella* (H.-S.) [pl. XLVII, fig. 2, 3]. In *Crambus heringiellus* H.-S. this prong has the dimensions of an enormous hook.

The female genitalia are interesting from the systematical point of view and provide important specific features. They

are developed similarly as the male ones, from terminal abdominal tergite and sternite. Ovipositor is a symmetrical organ; it consists of two labia — triangular plates hairy at their tops. At the base they are terminated with strengthening rods — gonapophyses posteriores. Labia are almost always separated. I have found the accretion of labia only in the species of the genus *Calamotropha* ZELL. [pl. LVIII, fig. 5, 6]. The shape of labia is not an important specific feature because it is generally uniform, similar in the related species. Gonapophyses posteriores are sometimes very weakly developed. *Crambopsis malacellus* (DUP.) [pl. LXII, fig. 1] lacks them at all. Exceptionally long gonapophyses posteriores are found in *Pediasia fascelinella* (HBN.) and in species related to it [pl. LIX]. It is too early still to say anything concerning the variability of the length of gonapophyses posteriores because I did not investigate this problem sufficiently as yet. It is possible that this occurs in some cases. For example in a female of *Pediasia fascelinella* (HBN.) from South-Eastern Europe I found gonapophyses anteriores and posteriores much shorter than those of the Central-European specimens. It is, possible, however, that I dealt with a new species but I could not tell it from one specimen only. The next part of the female genitalia is lamella subgenitalis — the subgenital plate. Its width varies according to a species but it does not provide any important specific features. On its end the lamella subgenitalis is provided with similar rods as labia; those are gonapophyses anteriores. They may be of various length; in some species they are almost completely reduced. Lamella subgenitalis is connected with the opening of ductus bursae. The opening of ductus bursae, i. e. ostium bursae, may be strongly accreted to lamella subgenitalis or connected with it by delicate chitin membranes. I found a complete accretion of lamella subgenitalis with ostium bursae in many species of the genera *Crambus* F. s. str., *Catoptria* HBN., *Thisanotia* HBN., *Calamotropha* HBN., *Xanthocrambus* BLESZ., and in the species of Section II of the genus *Pediasia* HBN. A membraneous connection appears in the species of the genera *Agriphila* HBN., *Chrysocrambus* gen. n. and in the species of Section I of the genus *Pediasia* HBN. In the overwhelming majority of cases

ostium bursae is strongly separated from the rest of ductus bursae by its size or stronger sclerotization. Only in the species of Section I of the genus *Pediasia* HBN. it is not so, a fact which is a peculiar exception in the generic group *Crambus* F. In these forms ostium bursae is marked only by a slight widening of ductus bursae, not distinguishable by the extension of sclerotization from the rest of ductus bursae. In the majority of species of the generic group *Crambus* F. ostium bursae appears as a strongly sclerotized, cup-like organ as in the species of the genus *Agriphila* HBN. [pl. LI, LII], also bag-like [*Crambus hortuellus* (HBN.) pl. L, fig. 3] or similar to a convex shield [*Crambus heringiellus* H.-S. pl. XLIX, fig. 6]. In such species as *Catoptria radiella* (HBN.), and species related to them [pl. LIII] ostium bursae is merely a widening of ductus bursae but is distinguishable by stronger sclerotization. Ductus bursae may be delicate, membranous [e. g. *Pediasia contaminella* (HBN.) pl. LIX, fig. 3], partly strongly sclerotized [*Pediasia luteella* (DEN. & SCHIFF.) pl. LIX, fig. 6], finally whole thickwalled (e. g. species of the genus *Xanthocrambus* BLESZ.). The length of ductus bursae is variable to great extent; from very short, reaching only several segments into the abdomen as in *Catoptria margaritella* (DEN. & SCHIFF.) to tremendously long as in *Pediasia fascellina* (HBN.) extending several times the length of the whole abdomen. In such cases ductus bursae is folded into loops. Bursa copulatrix is an organ generally round, almost in all cases transparent. It is not very large. An exceptionally small bursa copulatrix appears in the species of the genus *Xanthocrambus* BLESZ. Strongly sclerotized patches called signa appear on bursa copulatrix in various numbers. They have almost always the shape of prickly stars. Exceptionally spines are found in bursa copulatrix in *Metacrambus carectellus* (ZELL.).

**Key for the identification of European genera
and subgenera of the generic group *Crambus* F. s. l.**

1. Gnathos atrophied, has the form of a small ring or plate. Uncus several times longer than gnathos. In the female labia more or less rectangular. No gonapophyses poste-

- riores. Basal stripe on the fore wing. Outer margin of the fore wing incised under apex... *Crambopsis* DE LATTIN
- Gnathos well developed. Uncus at least twice longer than gnathos. In the female labia more or less triangular. Gonapophyses posteriores present. Basal stripe on fore wing present or absent. Outer margin of the fore wing incised under apex or not..... 2
2. In female genitalia in the bursa copulatrix numerous thorns appear. Dorsal margin of valva with a row of strong long bristles. Valva without processes. Uncus with many strong bristles. Outer margin of the fore wing distinctly incised under apex. No basal stripe.. *Metacrambus* gen. nov.
- In female genitalia in the bursa copulatrix no numerous thorns, at most one or two signa. Dorsal margin of valva without strong long bristles, only with hairs. Outer margin of the fore wing incised under apex or not. Basal stripe present or absent 3
3. Uncus simple, not divided. Uncus nearly twice longer than gnathos. In female bursa copulatrix a large plate-like signum or no signum. Ocelli present or absent. No basal stripe on the fore wing. Outer margin not incised under apex. End of valva straight or obliquely bluntly truncate. Dorsal margin of valva and membrana valvae interna without processes. Moths appearing on bogs or on the shores of stagnant waters..... *Calamotropha* ZELL.
- Uncus simple or divided. Uncus and gnathos more or less the same length. If uncus is distinctly longer than gnathos, then the uncus is divided. In female on bursa copulatrix signa take the form of small stars, often no signa. Ocelli present. End of valva usually rounded, or pointed. Dorsal margin of valva and membrana valvae interna often with processes. Basal stripe on the fore wing present or absent. Outer margin incised under apex or not. Moths appearing on dry or moist terrains..... 4
4. In male genitalia valva ended as a long bent hook. Pars basalis in the form of a strong long hook. Uncus wide, distinctly shorter than gnathos. Fore wing unicoloured, yellow *Neocrambus* gen. nov.
- In male genitalia valva not ended as a long bent hook.

- If valva is pointed, then pars basalis is not developed as a strong long hook. Wings variegated 5
5. In female genitalia two signa on bursa copulatrix ... 6
- In female genitalia one signum on bursa copulatrix, or else no signum 7
6. Fore wing with light-yellow ground and a chequered design formed of two transverse bands and horizontal golden-brown stripes. In the male genitalia pars basalis distinctly developed, in the form of a process wide at the base, strongly tapering towards the end. Saccus nearly as long as valva. No processes on valva excepting pars basalis. In female genitalia ostium bursae is not distinctly bordered from the rest of ductus bursae. Moths appearing nearly always in xerothermic regions.....
- Chrysocrambus* gen. nov. *Chrysocramboides* subgen. nov.
- Fore wing with variegated ground. Usually a distinct basal stripe on this wing, sometimes no design. Inner band at most as an indistinct trace. Outer margin of the fore wing usually distinctly incised. In male genitalia pars basalis variously formed. Saccus distinctly shorter than valva. In female genitalia ostium bursae often distinctly bordered from ductus bursae. Moths appearing mostly on wet meadows and peat-bogs *Crambus* F. s. str.
7. A golden-brown design of the fore wing in the form of two transversal bands and horizontal stripes. Sometimes this design is suffused, especially in the basal part of the wing. In male genitalia no processes on valva. In female genitalia on bursa copulatrix either one signum or no signum
- Chrysocrambus* gen. nov. *Chrysocrambus* subgen. nov. s. str.
- No design on the fore wing in the form of a golden-brown chequer. In male genitalia there are processes on valva, at least a distinct pars basalis 8
8. In female genitalia one signum on bursa copulatrix.. 9
- In female genitalia no signum on bursa copulatrix.. 10
9. In male genitalia pars basalis rather little sclerotized, short, finger-like. Valva rarely in the form of a long finger, but then there is no basal stripe on fore wing or no distinct large pale blotches. No second interior process

- on valva. Nearly exclusively lowland species, flying in dry regions with small exceptions *Agriphila* HBN.
- In male genitalia pars basalis well developed, in the form of a finger, a prong, a hook, or a fold of various shape. Nearly always a second ventro-lateral processes on valva. Montane species with small exceptions.... *Catoptria* HBN.
10. In male genitalia on ventral side of valva a processes or a strongly sclerotized fold 11
- In male genitalia on ventral side of valva no processes or strongly sclerotized fold 12
11. In male genitalia aedeagus with proeminent strong thorn at the end. Pars basalis narrow at the end *Thisanotia* HBN.
- In male genitalia aedeagus without proeminent strong thorn at the end, or with numerous such thorns. Pars basalis, if present, has the shape of a rounded fold, wide at the end *Xanthocrambus* BLESZ.
12. Cornuti in aedeagus. Outer margin of fore wing not incised under apex. Usually no basal stripe 13
- No cornuti in aedeagus. Outer margin of fore wing incised under apex. Basal stripe present. South-European species *Mesocrambus* gen. nov.
13. Light-coloured basal stripe on fore wing and a light-coloured spot prolonging the former 9
- No light-coloured basal stripe on fore wing and no light-coloured spot prolonging it. Species appearing nearly exclusively in xerothermic regions *Pediasia* HBN.

SYSTEMATICAL PART

Genus *Crambus* FABRICIUS, 1798

Typus generis: *Phalaena Tinea pascuella* LINNAEUS, 1758

Crambus FABRICIUS, 1798, Supplementum Entomologiae Systematicae (partim).

Palparia HAWORTH, 1803, Lepidoptera Britannica (partim).

Chilo ZINCKEN & GERMAR, 1817, Magazin für Entomologie (partim).

Argyroteuchia HÜBNER, 1825, Verzeichniss Bekannter Schmettlinge (partim).

Chrysoteuchia HÜBNER, 1825, Verzeichniss Bekannter Schmettlinge.
Selagia HÜBNER, 1825, Verzeichniss Bekannter Schmettlinge (partim).

A genus most differentiated in the generic group *Crambus* F. s. l. According to the structure of genitalia this genus could be divided into several distinct ones but I do not divide it for two reasons: 1) this group is characteristic more for North American fauna and is not numerously represented in Palaearctic. Therefore it is very difficult to establish a system of species inside this group; 2) the species of the genus *Crambus* F. s. str. show generally a similar design on their wings and it would be very unpractical to split them into many distinct genera because of the difficulties in the determination of these genera.

The genitalia of species of the genus *Crambus* F. s. str. show very great heterogeneity. The most stable and always appearing feature is the presence of two signa on bursa copulatrix in the female genitalia. Subgenital plate is always strongly connected with bursa copulatrix. The male valva has at its base a list-like thickening. Beside these features it is very difficult to establish others occurring repeatedly in all species of the discussed genus. In male pars basalis present or absent. If present, it has the shape of a hook [e. g. *C. hamellus* (THNBG.), or *C. pascuellus* (L.)], fold [*C. hortuellus* (HBN.)], sometimes only a thickening at the base of the valva [*C. silvellus* (HBN.)]. Uncus and gnathos always well developed. In the aedeagus the cornuti present or absent. Sometimes aedeagus armed with a hook [*C. dumetellus* (HBN.)]. Vesica sometimes terminated with a hook [*C. heringiellus* H.-S., *C. pratellus* (L.)]. Female genitalia similarly to those of the male show a great heterogeneity in their appearance. Generally they are of a much more complicated structure than in the other genera of the generic group *Crambus* F. Beside the presence of two signa on bursa copulatrix I found no other distinct common features for all species of the genus *Crambus* F. s. str.

Because of the evident conservatism showing in the external habitus, as well as in the structure of the genitalia, I think that the genus *Crambus* F. is one of the older ones in the generic group *Crambus* F. s. l. This the point of view is opposite to that I presented in the Ist Part of my Studies (BLESZYŃSKI,

1951). I did not, however, take under consideration this conservatism, which is, I think, a feature speaking for the old age of the group. Of course, in this case the simplicity of the genital structure of the genus *Agriphila* HBN. accepted in that paper as evolutionally the oldest would be a secondary phenomenon. This point of view is only a hypothesis not based on convincing proofs, because of the lack of fossil forms. Besides it is not known at all whether the genus *Agriphila* HBN. descends from the genus *Crambus* F. s. str., or presents an evolutionary line parallel to that of the genus *Crambus* F. s. str.

According to the coloration and design of the wings the species belonging to the genus *Crambus* F. s. str. may be divided into three groups. The first of them, the most numerous, is characterized by the following: on the fore wing there appears an oblong white stripe reaching to the $\frac{2}{3}$ of the length of the wing or even further. This stripe is situated visibly nearer to the costal margin than the inner margin. The stripe is darkened only in the aberrative specimens, in typical ones it is always silvery-white. In more or less $\frac{3}{4}$ of the wing's length from its base there is always a band. This band I will always call the outer one in distinction to the inner one going diagonally through out the middle of the wing. The outer band is always distinctly broken above¹⁾ the middle of the wing. It is silvery and generally enclosed in brown. Below the basal stripe there are often silvery-brown streaks. The basal stripe is in most cases prolonged by a white elongate spot, which lies still on the inner side of the outer band. The inner band is always absent. Underneath apex near outer margin there is always a white spot. Termen in general bent in or incised but never bent outwards. Apex always pointed. Cilia on outer margin of the fore wing underneath the apex white at the base. The hind wings show no distinct design. Sometimes they are darkened at the margins. To the second group belong only two species of the European fauna: *C. hortuellus* (HBN.) and *C. pallidellus* (DUP.). Here the basal stripe is absent and oblong clearings appear, running alongside the veins. The outer band present. The inner one is absent or appears excep-

¹⁾ All denominations of positions of elements in the wing design refer to a specimen as set and seen from above.

tionally as indistinct traces. The outer margin of the fore wing, similarly as in the previous group, is never convex but straight or delicately bent in. Hind wings unicolour, sometimes darkened at the margin. To the third and last group belong two species *C. perlellus* (SCOP.) and *C. rostellus* LAH. In these species the fore wings are uniformly silver or olive, sometimes silver with olive-brown streaks running alongside the veins. Hind wings uniformly coloured.

GROUP 1

Group type: *Crambus pascuellus* (L.)

Only one European species belongs here viz. *C. pascuellus* (L.). In the wing design it is very much related to such species as *C. silvellus* (HBN.) or *C. uliginosellus* (ZELL.) but in genitalia it differs very distinctly from these species. In male genitalia pars basalis is very strongly developed in the shape of a long hook. Uncus bifurcated into two separate lobes, which are provided with long strong bristles.

Crambus pascuellus (LINNAEUS, 1758)

[Pl. XXVII, fig. 1, pl. XLIX, fig. 4, pl. LXIII, fig. 1, 2]

Phalaena Tinea pascuella LINNAEUS, 1758, Systema Naturae Ed. X: 824.

Tinea Pascuella DENIS & SCHIFFERMÜLLER, 1775, Syst. Verz. Schmett. Wien. Gegend: 134.

Crambus pascuum FABRICIUS, 1798, Suppl. Entomol. Syst.: 471.

Palparia pascuea HAWORTH, 1811, Lepidoptera Britannica 3: 488.

Argyroteuchia Pascualis HÜBNER, 1825, Syst. Verz. Schmett.: 364.

Chilo Pascuellus TREITSCHKE, 1832, Schmett. Eur. 9: 75.

Crambus pascuellus DUPONCHEL, 1836, Hist. Nat. Léop. France 10: 50, pl. 269, fig. 1.

Antennae brown, lustrous, in the male slightly serrate underneath, in the female setaceous. Palps brown, whitish at the inner side. Frons slightly convex, rounded, golden-brown. Head golden-brown. Patagia lustrous golden-brown

at sides, whitish in the middle. Tegulae distinctly lustrous, golden-brown. Thorax brownish. The length of the fore wing varies from 10 to 13 mm, the width 3—4 mm. Costal margin from the wing base to $\frac{2}{3}$ its length straight, in the outer part distinctly bent outwards. Apex sharply pointed. Outer margin under the apex sharply, strongly incised, underneath this incision bent outwards. The ground of the fore wing yellow-brownish. The basal stripe snow white, at the wing base very near to the costal margin, connected with it. Basal stripe narrowed at its end, rather pointed, underneath smooth, without teeth. Between the basal stripe and outer band there is a white oval spot prolonging the stripe. This spot has more or less marked edges. The ground above the inner margin is distinctly whitish. The outer band narrow, distinct, below the costal margin oblique toward the incision of the outer margin, brown, at the inner and outer side enclosed by two triangular long white spots. On the level of incision of the outer margin the band is sharply broken toward wing base, straight, at the inner side brown, at the outer one silvery. Below the apex there is a triangular white spot, sometimes with brown centre. This spot ends at the incision of the outer margin. The outer margin from apex to its incision very distinctly bordered with black. Below the incision the place between the outer band and the outer margin not so brightly yellow coloured, but rather grey-brown. Cilia on the outer margin brown-golden, with metallic lustre, below the apex, at the base distinctly whitish. Hind wings white-greyish, with slight lustre, cilia white.

Subsp. *fumipalpellus* MANN, 1871 [pl. LXIII, fig. 2].

Crambus fumipalpellus MANN, 1871, Verh. Zool.-bot. Ges. Wien 21: 75.

?*Crambus acutellus* CHRÉTIEN, 1896, Naturalist: 190.

It is an Alpine race of the species in question. It has strongly darkened brown fore wing, almost unicoloured, brownish with strong lustre. The basal stripe is also strongly darkened brown, and it does not contrast with the ground of the wing.

I have received from the Naturhistorisches Museum in Wien one specimen of this subspecies labelled: *Crambus acutulellus* [sic!] CHRÉTIEN. *Crambus acutellus* CHRÉT. is therefore probably only synonymous with *C. pascuellus* (L.)

subsp. *fumipalpellus* MANN. Unfortunately, I do not know the original description of *Crambus acutellus* CHRÉT.

Male genitalia [pl. XXVII, fig. 1]: uncus narrow, pointed at the end. Gnathos bifurcated in two separated lobes, which have long strong bristles. Tegumen narrow. Saccus roundish. Valva rather narrow, rounded at the end. Pars basalis strongly developed as a long, strongly sclerotized hook, the end of which reaches almost to the end of valva. The ventral part of valva, from its base to $\frac{2}{3}$ its length, strongly sclerotized as a fold ending with a strong prong. Aedeagus unarmed, distinctly shorter than the whole apparatus, at its end strongly narrowed. Cornuti wanting.

Female genitalia [pl. XLIX, fig. 4]: lamella subgenitalis is accreted distinctly to ostium bursae and has an additional, wide, strongly sclerotized ventral plate. Ductus bursae strongly sclerotized, longitudinally ribbed, short, without loops, straight. Bursa copulatrix membranous. Two small, star-like signa.

Crambus pascuellus (L.) is a Palearctic species. It appears in lowland and mountains from middle of May to September in various regions, dry and wet. The caterpillar feeds on various grasses.

Examined material:

France: 1 female: „Mulhouse Ht.-Rhin Quart, - Rebberg 25 VI 1946, CH. FISCHER“, author's coll. 1 male: „Hügeln bei der Hochlandsburg Colmar, 1 VII 1943, CH. FISCHER“, author's coll. 4 males: „Sallanches et environs Ht.-Savoie 10—1400 m, 3—25 VI 1950, coll. CH. FISCHER“, author's coll. 1 male: „Briançon Mt. St. Pierre Ht.-Alpes, 3—23 VII 1951, 1500 m, coll. CH. FISCHER“, author's coll. 1 male: „Ascou le Pujal; Axles Thermes Ariège; 1300 m, 25—30 VI 1949, CH. FISCHER“, author's coll. 2 males: „Alpes Maritimes St.-Martin Vesubie Cascad du Boreon, SCHMIDT, 1925 VII 29—31“, author's coll.

Great Britain: 3 males: „E. E. G. No 3530, 3500, 3370, Camberley Surrey, 14 VI, 26 VI, 1 VII 1917“, author's coll. 2 males: „Byfleet Surrey 12 VI 1913 Drnk.“, author's coll.

Danmark: 2 males and 1 female: „Rungsted, VI—VII 1951, LANGER“, author's coll.

Germany: 5 males and females: „Süd-Pfalz Böhler-Bruch, 28 VI 1949, leg. de LATTIN“, author's coll. 3 males: „Süd-Pfalz St. Johann, 12 VI 1949, leg. de LATTIN“, author's coll. 1 female „Süd-Pfalz Geilweilerhof, 19 VI 1949, leg. de LATTIN“, author's coll. 11 males and females: „Bav. alp. Kochel 600 m Moos, 5—22 VI 1950, L. OSTHELDER leg.“, author's coll.

Austria: 1 male: „16 VI 1943, C. Dobratsch Kärnten, leg. TURNER“,

author's coll. 1 female: „9 VI 1943, Carinthia Klagenfurt, Umg. leg. Jos. THURNER“, author's coll.

Italy: 2 males: „Trentino Pinzolo, 2 VII 1924 [and] 30 VI 1926, A. FIORI“, author's coll. 1 male: „Emilia Baarimone, 22 VI 1930, A. FIORI“, author's coll. 1 male: „Pontecchio, 3 VI 1928, GALASSI“, author's coll.

Hungary: 2 males: „Vidrány, SCHMIDT, 9—10 VI 1922“, author's coll.

Poland: 2 females from Sudety Mts., author's coll. 1 male from Bielek n. Odra, author's coll. 46 males and females from environs of Kraków: Podgórk, Kostrze, Przegorzały, Las Wolski, 25 V—6 VIII, 1946—1949, author's coll. 8 males and females from Beskidy Mts.: Rytro, Krynica (distr. Nowy Sącz), 700 m, 16 VI—20 VI, 1951—1953, author's coll. 1 male from Podezerwone, distr. Nowy Targ, 14 VII 1950, author's coll. 7 males and females from Tatry Mts.: Zakopane—Las Białego 900 m, VII 1948, author's coll. 1 male from Katowice—Muchowiec, 19 VI 1948, author's coll. 1 female from Chotel Czerwony, distr. Busko, 2 VI 1947, author's coll. 1 male and 2 females: „Poznań-Osiedle, 22 VI 1951, SZMYT leg.“, author's coll.

USSR: Several males and females from Western Podolia (distr. Zaleszczyki), coll. TOLL.

GROUP 2

Group type: *Crambus silvellus* (HBN.)

I place here only one species viz. *Crambus silvellus* (HBN.). It differs by its copulatory apparatus very distinctly from all remaining species of *Crambus* F. s. str. In male genitalia pars basalis is wanting. Whole valva strongly sclerotized, without any process. In female genitalia lamella subgenitalis fused with ostium bursae, arched. In the wing design *C. silvellus* (HBN.) is similar to such species as *C. ericellus* (HBN.), *C. uliginosellus* (ZELL.) or *C. pascuellus* (L.)

Crambus silvellus (HÜBNER, 1810—1813)

[Pl. XXVII, fig. 3, pl. L, fig. 1, 2, pl. LXIII, fig. 5]

Tinea silvella HÜBNER, 1810—1813, Samml. Europ. Schmett.: pl. LIV, fig. 369 (♀), fig. 370 (♂).

Chilo Adippellus GERMAR & ZINCKEN, 1817, Magazin Entomol. 2, B: 47.

Argyroteuchia Adippalis HÜBNER, 1825, Verz. Bek. Schmett.: 364.

Crambus adippellus DUPONCHEL, 1836, Hist. Nat. Lép. France 10: 48, pl. 269, fig. 4.

Crambus silvellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 54.

Antennae greyish-brown, flatly serrate in male, setaceous in female. Palps greyish-brown on sides, from underside white. Frons greyish-brown, slightly convex, rounded. Head and patagia greyish-brown. Patagia sometimes slightly paler in the middle. Thorax and tegulae brownish. The length of the fore wing varies from 8,5 to 12,5 mm, the width ca 4 mm. Costal margin slightly convex, further on straight. Apex pointed. Outer margin slightly incised. The ground of the fore-wing brownish-yellow with a very slight lustre. The basal stripe silver-white, never darkened. It is situated near beneath the costal margin, at the wing base it fuses with the latter. On its lower part the stripe is without the tooth, narrowed at the end, slightly pointed. At the prolongation of the basal stripe a similarly coloured, oval spot reaching outer margin and interrupted by the brown, inner part of the outer band. The ground between the stripe and the costal margin darkened brown till the half length of the wing. The spot prolonging the stripe enclosed from above by a blackish streak. Above this lies another streak, silver-blue, enclosed by scarce black scales. Similarly coloured silver-blue streaks are situated beneath the oval spot. They are longer than the upper one, and, like it, touch the basal stripe. Still beneath are two lines coloured brownish. The ground above the dorsal margin cleared white. The outer band sharply marked, under the costal margin oblique toward the outer margin, above the middle of the wing sharply angled, and further on oblique toward the wing base. It is silver-bluish and enclosed by a clear brown line on the inner side. Under the costa the band is bordered at both sides with triangular spots, the inner of which is bigger and more oblong. In the apical angle is a V-shaped, white spot touching with one arm the outer margin, which is in this point marked black. Underneath the incision of the outer margin, near the latter four small, black dots. The cilia on outer margin golden with metallic lustre, cleared white from

the apex till the incision of termen. Hind wings greyish, in the basal part whitish. Cilia snow-white.

This species is somewhat similar to *C. ericellus* (HBN.), *C. uliginosellus* ZELL. and *C. pascuellus* (L.). From *C. ericellus* (HBN.) it differs distinctly in the coloration. *C. ericellus* (HBN.) has the ground of the fore wings brown, the basal stripe in this species is separated from the costal margin at the wing base. The hind wings of *C. ericellus* (HBN.) are brown, while those of *C. silvellus* (HBN.) are greyish-white. From *C. pascuellus* (L.) it differs by the incision of termen; *C. pascuellus* (L.) has this incision very deep. From *C. uliginosellus* ZELL. it differs by the connection of basal stripe with the costa. In *C. uliginosellus* ZELL. the basal stripe touches the costal margin almost to the half of the wing length while in *C. silvellus* (HBN.) this connection occurs only at the base of the wing. Besides, the spot prolonging the basal stripe has obliterated outlines in *C. uliginosellus* ZELL., while is sharply marked in *C. silvellus* (HBN.).

Male genitalia [pl. XXVII, fig. 3]: uncus pointed, visibly shorter than gnathos. Saccus oval. Valva sharply pointed, wholly strongly sclerotized without processes. The dorsal angle of the valva is narrowly more sclerotized than the rest of it. This slight thickening might be considered as pars basalis. Aedeagus visibly shorter than the whole apparatus, with six rather small cornuti.

Female genitalia [pl. L, fig. 1, 2]: lamella subgenitalis strongly fused with ostium bursae, arched. The edge of ostium bursae variable in shape, sometimes strongly incised. In the ventral part of the arched ostium bursae there is a strong V-shaped, list-like strengthening. Ductus bursae short, wholly transparent. Bursa copulatrix transparent, with two relatively big, star-like signa.

C. silvellus (HBN.) is an Euro-Siberian species, known from Pyrenees to Manchuria, confined to lowlands. In Tatry Mts. it reaches only 900 m. It appears in July and August on wet meadows. FREY (1880) gives also June as the time of appearance.

Examined material:

Finland: One male: „N. Elsö, 28 VII, 1931, W. HACKMANN“, author's coll.

Germany: 21 males and females: „Bav. alp. Kochel 600 m Moss, 17 VIII — 21 VIII 1949—1950, OSTHELDER leg.“, author's coll.

Poland: 5 males and females: „Toruń, 19 VII — 26 VII 1947“, coll. Zool. Inst. of the M. Kopernik Univ., Toruń. One male: „Poznań, 1 VIII 1950, leg. A. SZMYT“, author's coll. One female from Ligota Tworowska distr. Rybnik, 28 VII 1950, authors coll. 112 males and females from Podgórk, distr. Kraków, 5—23 VIII 1945—1952, author's coll. 48 males and females from Dulowa, distr. Chrzanów, 5—8 VIII 1952, author's coll. One male from Kielków-Las, distr. Mielec, 25 VIII 1943, author's coll. 9 males and females from Tatry Mts., Zakopane, 900 m, 31 VII — 1 VIII 1948, author's coll.

Czechoslovakia: 2 females „Kačov 3 VIII 1934 [and] 17 VIII 1933, Bohemia, Dr. R. SCHWARZ“, author's coll.

GROUP 3

Group type: *Crambus ericellus* (HBN.)

Three strongly related species with similar genital structure belong here: *Crambus uliginosellus* ZELL., *C. ericellus* (HBN.) and *C. alienellus* (GERM. & ZINCK.). In male genitalia pars basalis is separated from valva in half length of valva or almost at its end. Second process on valva is developed. In aedeagus there is a single cornutus.

Crambus uliginosellus ZELLER, 1850

[Pl. XXVII, fig. 2, pl. XLIX, fig. 2, pl. LXIII, fig. 3, 4]

Crambus uliginosellus ZELLER, 1850, Bresl. ent. Zeit. 4: 34.

Antennae brown, in the male slightly serrate, in the female setaceous. Palps from the outer side light-brown on sides, white on the inner side, underneath white at the base. Frons slightly convex, rounded, snow-white. Head coloured similarly as frons. Patagia light-brown on sides, white in the middle. Thorax white. Tegulae light-brown. The length of the fore wing varies from 7,5 to 10 mm, the width 2,8—3,8 mm. Costal margin straight, apex pointed, outer margin beneath the apex visibly incised. Ground of the fore wings light-brown-golden, almost dim. The basal stripe white, sometimes darkened yellow, or greyish. It is rather wide and touches the costa almost to

the half of the wing length. At this point the costal margin is darkly eclosed. In *C. silvellus* (HBN.) and *C. pascuellus* (L.) having a similar design and coloration of the wings the basal stripe touches the costal margin only at the base of the wing [*C. silvellus* (HBN.)] or to $1/3$ of its length [*C. pascuellus* (L.)]. The basal stripe of *C. uliginosellus* ZELL. reaches to ca $3/4$ of the fore wings length, at the end it is pointed and narrowed. The stripe is enclosed by a brown line. On its prolongation lies a white spot with fused margins, which reaches to the outer band. The shape of the outer silvery band similar to that of *C. alienellus* (GERM. & ZINCK.), or other related species. The band is enclosed brown on the inner side. In the apical angle there is a V-shaped white spot. With one arm it touches the outer margin which is here enclosed black. Underneath the incision of the outer margin, between the outer margin and outer band several small black spots. The cilia on outer margin strongly lustrous, from the apex to the incision white, below it golden. The hind wings snow-white, sometimes slightly darkened greyish-yellow. Cilia snow-white, do not contrast with the colour of the wing.

Strongly lighter specimens of *Crambus pratellus* (L.), especially females, are somewhat similar to *C. uliginosellus* ZELL. They may be, however, easily distinguished by the coloration of the hind wings. *C. pratellus* (L.) has dark, brownish-grey hind wings and whitish cilia, visibly contrasting with the ground of the wing.

ab. *infuscatellus* CARADJA, 1910, Iris 24.

Three males from Schulterbach with darkened basal stripe of the fore wing, and dark hind wings.

Male genitalia [pl. XXVII, fig. 2]: uncus short, relatively wide, pointed. Gnathos slim, nearly twice as long as uncus, with delicate hook at its end. Saccus round. Pars basalis separated from the valva almost at its end. Valva slightly pointed. Second process on valva better developed than in *C. ericellus* (HBN.) and *C. alienellus* (GERM. & ZINCK.), situated ventrally and visibly nearer to the base of the valva than the point in which pars basalis leaves valva. Aedeagus straight, very thin. Its length equals the length of the whole copulatory apparatus. The aedeagus armed at the end with a hook with

rather long base. Cornutus narrow, thin but visibly shorter than that of *C. alienellus* (GERM. & ZINCK.).

Female genitalia [pl. XLIX, fig. 2]: lamella subgenitalis wide. Gonapophyses anteriores absent. Ostium bursae strong funnel-like. Ductus bursae narrow, short, weakly sclerotized, transparent. Bursa copulatrix transparent. Two small, star-like signa.

The species known thus far mainly from Europe. From outside Europe reported from Ak-Chehir. In Europe widely distributed. Occurs in very wet regions. Appears from June to September. In the Alps according to FREY (1880) it reaches to 4000' (ca 1300 m). In Tatry Mts. it appears only in the submontane region (to ca 900 m).

Examined material:

Germany: 25 males and females: „Bav. alp. Kochel 600 m Moos, 22 VI — 4 VIII, 1949—1950, L. OSTHELDER leg.“, author's coll.

Austria: 1 male: „Austria Superior Fornach Moor, 13 VII 1946. Jos. KLIMESCH“, author's coll. 1 male: „Styria Seitzthal, 2 VII 1947, J. KLIMESCH“, author's coll.

Hungary: 1 male: „Héviz, SCHMIDT, 1932 IX 11“, author's coll.

Poland: 95 males and females: „Katowice Muchowiec, 19 VI 1948, BLESZYŃSKI“, author's coll. 56 males and females: „Polonia mer. Dulowa distr. Trzebinia, 8 VI — 3 VII 1949—1952, leg. BLESZYŃSKI“, author's coll. Several ♂ and ♀ from Pieniny Mts. VII 1950 leg. and coll. TOLL. 11 males from Tatry Mts. „Polonia mer. Tatry 900 m. Zakopane, 23 VI 1950, leg. BLESZYŃSKI“, author's coll.

USSR: 1 male spec from Podolia: „Ścianka Hłody pow. Borszczów, 5 VII 1937, S. TOLL leg.“, coll. TOLL.

***Crambus ericellus* (HÜBNER, 1810—1813)**

[Pl. XXVII, fig. 4, pl. XLIX, fig. 3, pl. LXIII, fig. 6]

Tinea ericella HÜBNER, 1810—1813, Samml. Eur. Schmett.: pl. 54, fig. 371.

Chilo ericellus GERMAR & ZINCKEN, 1817, Magazin Ent. 2: 52.

Argyroteuchia Ericalis HÜBNER, 1825, Verz. Bek. Schmett.: 364.

Crambus Ericellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 54.

Antennae brown, in male weakly serrate, in female setaceous. Palps brown at the base, whitish at sides. Frons slightly convex, rounded, brown. Head brown. Patagia brown, generally slightly paler in the middle. Tegulae and thorax brown.

The length of the fore wing varies from 9,5 to 11,5 mm, the width 3,5—4 mm. The ground of the fore wing brown, lustrous. There is a white basal stripe, strongly contrasting with the wing's ground colour. This stripe reaches to ca 2/3 of the wing length, it is distinctly narrowed at the end; at the base of the wing it does not touch the costal margin but is visibly removed from it. In the prolongation of the stripe there lies a white oval spot which almost touches the outer band. Above and below this spot several brown, narrow streaks, darker than the ground colour of the wing. The upper of these streaks is sometimes covered with silver scales. The outer band under costal margin oblique toward the outer margin, broken above the middle of the wing, and oblique toward the base of the wing. This band is white below costal margin and silver still lower. Outer margin below apex delicately incised, marked black. In this point near the outer margin there lies a white, generally triangular spot. Below the incision of termen several black dots. Cilia on the outer margin brownish-golden with metallic lustre, below apex sharply whitened. Hind wings brown. Gilia whitish with brown streak of basal scales.

Male genitalia [pl. XXVII, fig. 4]: uncus and gnathos slender, long, pointed. The length of uncus corresponds almost to that of the gnathos. By this feature the male genitalia of *C. ericellus* (HBN.) differ from these of *C. alienellus* (GERM. & ZINCK.). In the latter uncus is distinctly shorter than gnathos. Saccus roundish. Valva rounded, bent upwards. Pars basalis separated from valva a little behind the middle of the length of valva. This process is not strongly developed, but bent upwards, pointed. Second process on valva delicate, weakly developed, situated a little nearer the end of valva than pars basalis. Its situation is ventro-lateral. Aedeagus almost as long as the whole apparatus, bent, with one long cornutus. The length of cornutus is equal to half the length of aedeagus.

Female genitalia [pl. XLIX, fig. 3]: gonapophyses anteriores are absent. Ostium bursae strongly accreted to lamella subgenitalis. Ostium bursae funnel-like, provided with a strengthened assymmetrical plate. Ductus bursae with a loop, with a strongly sclerotized streak in the middle. Bursa copulatrix transparent with two star-like signa.

This species is similar in the design of the wings to *C. silvellus* (HBN.) but it differs from it distinctly by the brown coloration.

Crambus ericellus (HBN.) is known thus far as a European endemic species, distributed mainly in the Northern parts of this continent. It is a lowland species but it appears also in the not very high mountain ranges. For example I collected it in great numbers on the Jaworzyna in Beskid Sądecki Mts. (Middle Carpathians) on 1100 m. MARIANI (1941) does not mention this species from Italy. From France LHOMME (1935) reports that it is a species not common, confined to the mountainous regions. It is possible that the occurrence of *C. ericellus* (HBN.) in mountainous regions of France is caused by the climatic conditions for as this species is distributed rather in the northern parts of Europe. In the lowlands of Poland I met it in dry localities. It appears in June and July. Caterpillar unknown.

Examined material:

Germany: 1 female: "Süd-Pfalz St. Johann, 12 VI 1949, leg. DE LATTIN" author's coll.

Poland: 1 male: „Sudety“, author's coll. 1 female from Łańsk-Rybaki, distr. Olsztyn, 21 VII 1952, author's coll. 2 spec. from environs of Toruń, coll. Zoological Institute of the M. Kopernik University in Toruń. 1 female: „Skotniki pow. Końskie, VII 1949, RAZOWSKI“, author's coll. 4 males: „Pieniny Potok, 12 VII 1949, leg. S. TOLL“, coll. TOLL. 3 males from, Podgórk distr. Kraków, 30 V — 2 VII, 1948—1951, author's coll. 61 males and females from Beskid Sądecki Mts.: Jaworzyna ad Krynica 1100 m, 13 VI — 17 VI 1950—1952, author's coll.

USSR: 1 female: „Rossia Mińsk, 15 VII — 15 VIII“, author's coll.

Crambus alienellus (GERMAR & ZINCKEN, 1817)

[Pl. XXVII, fig. 5, pl. XLIX, fig. 1, pl. LXV, fig. 2—7]

Chilo alienellus GERMAR & ZINCKEN, 1817, Magazin Ent. 2: 60.

Chilo zinckenellus TREITSCHKE, 1835, Schmett. Eur. 10 (3): 166.

Crambus tigurinellus DUPONCHEL, 1836, Hist. Nat. Lép. France 10: 59, pl. 270, fig. 3.

Chilo ocellellus ZETTERSTEDT, 1840, Insecta Lapponica: 994.

Crambus Alienellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 54, fig. 3.

Antennae greyish-brown, in male flatly serrate, in female setaceous. Palps brown, at the base white on the under side. Frons greyish-brown, a little convex, rounded. Patagia greyish-brown, sometimes whitish in the middle. Thorax and tegulae greyish-brown. The length of the fore wing varies from 9,5 to 11,5 mm, the width 3,5—4 mm. The ground of the fore wing blackish-brown, almost lustreless. In its basal part the fore wing coloured black-brown; the field before and behind the outer band brown. It is rather an important feature, because there exist strongly aberrative specimens of *C. alienellus* (GERM. & ZINCK.) with the design similar to that of *C. heringiellus* H.-S. *C. heringiellus* H.-S. has the ground of the fore wing uniformly dark brown. Basal stripe in *C. alienellus* (GERM. & ZINCK.) somewhat longer than in *C. heringiellus* H.-S. and visibly shorter than in *C. ericellus* (HBN.). It is always white, contrasting sharply with the ground of the wing. At the base of the wing it is narrow, does not touch the costal margin. In its outer part the basal stripe is widened, at the end it narrows again, at its lower part provided with a small tooth. As the prolongation of the basal stripe there appears white, oval spot, distinctly remote from the outer band. Above and under this spot there are several white streaks. The highest of them, placed underneath the costal margin has the shape of a triangular spot. At the base of the wing, on the dorsal margin, there is also a white streak. Outer band sharply marked, but contrasting weakly with the ground colour of the wing. It is of blue-silvery colour. Underneath the costal margin it is oblique toward the outer margin, above the middle of the wing sharply angled toward the base. In the apical angle of the wing lies a white bow-like spot. Apex slightly rounded, weakly pointed. Outer margin above middle of the wing slightly incised. Underneath this incision near outer margin there are several small black spots, sometimes enclosed from the inner side by small half-moon-like white spots. The cilia on outer margin dark grey with strong lustre. Hind wings dark, grey, slightly lustrous, with greyish-white cilia. Such elements of the white design on the fore wing as the spot prolonging the basal stripe, streaks situated above and under this, a bow-like spot in the apical angle, and half-moon-like

spots enclosing the black ones on outer margin are sometimes more or less reduced. This is why several aberrations were described:

ab. *moënsis* STRAND, 1919, Nyt. Mag. Naturw. **56**: 126.

One female from Mo (Norway) with the decline of the white spot prolonging the basal stripe.

ab. *rananensis* STRAND, 1919, Nyt. Mag. Naturw. **56**: 126.

Three females from Mo (Norway) with the white spot prolonging the basal stripe smaller than that of the typical specimens and white streaks in decline.

ab. *hemnenensis* STRAND, 1919, Nyt. Mag. Naturw. **56**: 127.

One female from Hemnesberget (Norway) with the white spot prolonging the basal spot widened and almost 3 mm long.

The specimens from the peat-bogs of Podhale (Southern Poland, distr. Nowy Targ, Podczerwone, Czarny Dunajec, 600 m) are visibly smaller (length of the fore wing 9,5 mm) than those from the peat-bogs of Bavaria (length of the fore wing 10—11,5 mm). The Scandinavian specimens are more similar to those of Bavaria than from Podhale.

Male genitalia [pl. XXVII, fig. 5]: uncus and gnathos wider than those of *C. ericellus* (HBN.). Uncus visibly shorter than gnathos. Saccus roundish. Valva bent upwards at its end. Pars basalis separated from valva, distinctly farther than the half of the valva length, further than in *C. ericellus* (HBN.). The second process on valva small. It lies a little nearer to the end of the valva than pars basalis and has the ventro-lateral position. Aedeagus slightly bent, with one, long cornutus. This is somewhat shorter than that in *C. ericellus* (HBN.).

Female genitalia [pl. XLIX, fig. 1]: gonapophyses anteriores absent. Lamella subgenitalis fused with ostium bursae. Ostium bursae funneled, provided with an assymmetrical strenghtening plate. Ductus bursae with a loop, having a strongly sclerotized stripe in the middle. Bursa copulatrix transparent, with two star-like signa.

The species is known thus far as an European endemic, distributed mainly in the northern part of this region. Its southern border are Alpes Maritimes. In the Alps according

to FREY (1880) it reaches 5500' (ca 1680 m). In Tatry Mts. it does not appear over 900 m. This species is connected with peat-bogs, on which, depending on the altitude, it occurs from May until the end of July. Caterpillar unknown. The egg has a sculpture quite different than the eggs of other species from the generic group *Crambus* F. While eggs of many species of this group have distinct lengthwise and delicate diagonal ribbing, the eggs of *C. alienellus* (GERM. & ZINCK.) have a hexagonal sculpture. I had no opportunity to examine the eggs of related species such as *C. ericellus* (HBN.) or *C. uliginosellus* ZELL. It would be interesting to study the sculpture of their eggs.

From North America a species related to *C. alienellus* (GERM. & ZINCK.) viz. *Crambus labradoriensis* CHRIST. is known. After the study of the genitalia of Canadian specimens of this species I stated that there are only very small differences between male genitalia of *C. alienellus* (GERM. & ZINCK.) and *C. labradoriensis* CHRIST. This shows that *C. labradoriensis* CHRIST. is probably a subspecies of *C. alienellus* (GERM. & ZINCK.). Unfortunately the lack of female specimens of *C. labradoriensis* CHRIST. does not allow me to solve this problem. In the design and coloration of the wings *C. labradoriensis* CHRIST. is very similar to *C. alienellus* (GERM. & ZINCK.).

Examined material:

Finland: 1 male and 5 females: „Tb Pyhähäkki, 26—29 VII 1947, F. HACKMANN“, author's coll. 1 female: „N. Lappvik, 16 VI 1935, W. HACKMANN“, author's coll.

Danmark: 3 females: „Bollenmose, 14 VI 1952, LANGER“, author's coll.

Germany: 13 females: „Bav. alp. Kochel 600 m Moos, 22 V — 30 V 1950, L. OSTHELDER leg.“, author's coll. 4 males and females: „Bavaria mer. Tenzburg, 20 V — 14 VII 1947—1950, L. OSTHELDER leg.“, author's coll. 1 female: „Bav. mer. Kirchseemoos b. Schweltflach, 700 m, 12 V 1943, L. OSTHELDER leg.“, author's coll.

Poland: 1 male: „Puszcza Kampinoska rew. Sieraków, VII, ŚWIDERSKI“, author's coll. Several males and females from Zawiercie (South Poland) leg. MASŁOWSKI, coll. I. Z. P. A. S., Warszawa. 37 males and females from Podczerwone, distr. Nowy Targ, 4 VII 1949, author's coll. Several males and females from Czarny Dunajec, distr. Nowy Targ, VII 1941, leg. and coll. TOLL.

GROUP 4

Group type: *Crambus heringiellus* H.-S.

I include here one species, viz. *Crambus heringiellus* H.-S. It is rather similar in the design of the wings to *Crambus alienellus* (GERM. & ZINCK.) but it differs from it distinctly by its genitalia. Vesica ended with an enormous hook. Female genitalia characteristic by the peculiar shape of ostium bursae not occurring in other species of the genus *Crambus* F. s. str. This is like a broad cylinder.

***Crambus heringiellus* HERRICH-SCHÄFFER, 1849**

[Pl. XXVIII, fig. 3, pl. XLIX, fig. 6, pl. LXVI, fig. 1—2]

Crambus heringiellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmiett. Eur. 4: 54, Sppl. 142.

Antennae dark brown serrate in male, setaceous in female. Palps at sides brown outside, from inside sometimes lightened, at the base white underneath. Frons brown, slightly convex, rounded. Patagia, head, thorax and tegulae coloured similarly as the fore wings i. e. dark brown. The length of the fore wing varies from 8,5 to 11 mm, the width 3—4,5 mm. Costal margin straight, apex pointed. Outer margin underneath the apex very slightly incised. The ground of the fore wing dark brown. The basal stripe creamy, narrow. It reaches almost to the half of the wing, widened at the end, blunt. It is more distant from the dorsum than from costa. On its prolongation, but before the outer band, lies an oval, oblong light spot similarly coloured. The length of this spot corresponds more or less to the distance between the end of the basal stripe and the beginning of this spot. It is an important feature distinguishing this species from the similar *Crambus alienellus* (GERM. & ZINCK.). In *C. alienellus* (GERM. & ZINCK.) the distance between the end of the basal stripe and the spot prolonging it is visibly greater than the length of the prolonging spot. The outer band sharply marked, but very slightly con-

trasting with the ground of the wing; coloured bluish. It is narrow, line-shaped, angled above the middle of the wing, further on slightly oblique toward the wing base. The band is terminated near the costal margin by a brown spot enclosed on both sides by creamy little spots, the inner of which is visibly bigger than the outer one. Near the outer margin, beneath the apex there is a little creamy spot. Under this, on the outer margin, several black dots. Cilia lustrous, dark brown, below the apex creamy at its base. The hind wings dark brown, a little darker than the fore ones, dim. Cilia distinctly lighter than the ground colour, dirty creamy with a brown streak of basal scales.

Male genitalia [pl. XXVIII, fig. 3]: uncus narrow, long, pointed. Gnathos slim, ended with a club-like widening. Tegumen narrow. Saccus similar to a slightly bent rectangle. Pars basalis separated from valva only at its end, distinctly bordered from the latter. At its base it has a list-like thickening. Valva pointed with a fold more sclerotized than its middle part. This fold is broad at the base of valva and gets narrow toward its end. Near the end of the valva there appears a small process. This is a part of the ventral fold and is not more sclerotized than the latter. Aedeagus without cornuti, straight. Vesica terminated with an enormous hook. Aedeagus a little longer than the whole copulatory apparatus. Its length is ca 2,3 mm.

Female genitalia [pl. XLIX, fig. 6]: characteristic by the peculiar shape of ostium bursae. This is similar a broad cylinder ca 1,4 mm long. The upper edge is provided with three blunt processes; the two lateral ones are considerably narrower and longer than the wide and short middle one. Ductus bursae short, rather weakly sclerotized. On the bursa copulatrix there are two star-like signa. The length of the whole copulatory apparatus ca 3 mm.

Crambus heringiellus H.-S. is a North European element; it is reported, however, by MARIANI (1941) from Sicily [?]. In Central Europe it reaches the Carpathian and Sudety Mts. It appears in July and August in sandy regions among young pine trees. The caterpillar unknown.

Examined material:

Germany: 2 males and 2 females: „Lüneburg-Heide Nider-Haverbeck. E. VII 1946 [and] 31 VII 1930. E. JÄCKH“, author's coll.

Poland: Several males and females from Szczecin, coll. I. Z. P. A. S. Warszawa and author's coll. 1 male: „Polonia sept. Kretowiny distr. Morag, 28 VII 1953, leg. A. GAJ“, author's coll. 1 female from Wolin Isle — Międzyzdroje (Northern Poland), 29 VII 1950, author's coll. 1 female: „Poznań ul. Dolina, 5 VII 1936. M. LEWANDOWSKI“, author's coll. 1 male: „VII 1938, Ligota Tworkowska G. Śląsk, leg. DROZDA“, author's coll.

GROUP 5

Group type: *Crambus hamellus* (THNBG.)

One European species here belongs: *Crambus hamellus* (THNBG.). It differs very much by its genitalia from other species of the genus *Crambus* F. s. str. This group is far more numerously represented in the Nearctic fauna. Male genitalia are similar to those of many species of the genus *Catoptria* HBN. with strong, long pars basalis and lateral process on valva. Female has an additional, strongly sclerotized dorsal plate fused with ostium bursae. A characteristic feature of the wing design is the lack of the white spot prolonging the basal stripe of the fore wing.

***Crambus hamellus* (THUNBERG, 1788)**

[Pl. XXVIII, fig. 4, pl. L, fig. 7, 8, pl. LXV, fig. 1]

Tinea hamella THUNBERG, 1788, Dissert. Entomol.: 97, pl. 4, fig. 3.

Tinea Ensigerella HÜBNER, 1810—1813, Samml. Eur. Schmett.: pl. 54, fig. 367.

Palparia baccaestria HAWORTH, 1811, Lep. Brit. 3: 488.

Chilo Ensigerellus GERMAR & ZINCKEN, 1817, Magazin Entomol. 2: 53.

Argyroteuchia Ensigeralis HÜBNER, 1825, Verz. Bek. Schmett.: 364.

Crambus ensigerellus DUPONCHEL, 1836, Hist. Nat. Léop. France, 10: 57, pl. 275, fig. 4.

Crambus Hamellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 53.

Antennae brown, in male distinctly serrate, in female setaceous. Palps brown at sides, whitish on the inner side, from underneath whitish. Frons brown, rather strongly convex, rounded. Head, patagia, tegulae and thorax brown. The length of the fore wing varies from 8,5 to 11,5 mm, the width 3—4 mm. Costal margin only slightly convex at the base of the wing, further on straight. Apex pointed, outer margin visibly incised. The ground of the fore wing brown, lustrous, in the outer part sprinkled with whitish. The basal stripe snow-white, situated under the costal margin; it touches the costal margin only quite near the wing base; on its lower part provided with a distinct tooth, pointed toward the outer margin. The stripe is ended sharply, pointed; it has slimmer shape than in any other species of the genus *Crambus* F. s. str.; it reaches to $\frac{3}{4}$ of the wing length but is visibly distant from the outer band. The white spot prolonging the stripe is lacking. Above and beneath the stripe end very slight traces of several short silvery lines. The outer band underneath the costal margin oblique toward the outer margin, above the middle of the wing strongly broken toward the wing base. It is sharply silvery marked, enclosed brown on the inner side. Underneath costa the band is enclosed by white triangular spots. In the apical angle there is a dark-brown, oblique spot, and a second triangular, white one. This white spot adheres to termen, which in this point is bordered dark-brown. The field under the incision of the outer margin sprinkled strongly with whitish scales. Several black, oblong little spots near the outer margin. The cilia on the outer margin brown, with metallic lustre, under the apex whitish at the base. Hind wings pale greyish, near the apex and beneath, near the outer margin whitish. Cilia lighter, whitish.

This species is easily distinguished from the other ones of the genus *Crambus* F. s. str. because of the lack of the white spot prolonging the basal stripe.

Male genitalia [pl. XXVIII, fig. 4]: are as it was mentioned above, similar to those of the species of the genus *Catoptria* HBN. I think that this is a convergent feature. Several features are developed here differently than in *Catoptria* HBN. Uncus

is provided with numerous, short bristles; this never occurs in the species of *Catoptria* HBN. Uncus visibly shorter than the gnathos. Gnathos slim, widened at the end, rounded. Saccus trapezoidal. The shape of pars basalis similar to that of some species of *Catoptria* HBN. This is very strongly developed as a strongly sclerotized hook, longer than valva. At the end, pars basalis pointed, slightly bent downward. The second process on valva appears here situated laterally, similarly as in the species of *Catoptria* HBN. Aedeagus somewhat shorter than the whole copulatory apparatus, with one rather short cornutus.

Female genitalia [pl. L, fig. 7, 8]: lamella subgenitalis narrow. Gonapophyses anteriores absent. Ostium bursae is accreted with the lamella subgenitalis and additional large, rounded, strongly sclerotized plate. Ostium bursae slightly developed. Ductus bursae weakly sclerotized, straight, without loops. Bursa copulatrix as long as the rest of the apparatus, transparent, with two small star-like signa, one of which is distinctly smaller than the second.

Crambus hamellus (THNBG.) is a Holarctic element. In North America it appears as subsp. *carpenterellus* PACK. and in the typical form. The specimens of subsp. *carpenterellus* PACK. are considerably bigger than the typical ones. In the male genitalia of the typical form and subsp. *carpenterellus* PACK. I have found no essential differences. In Europe *C. hamellus* (THNBG.) is distributed mainly in the northern part, in the south it is rare. This species is confined to the lowlands. It appears in dry localities, mostly among young pine trees. The caterpillar unknown.

Examined material:

Finland: 1 male: „Fennia N: Tvärminne, 30 VII 1937, W. HACKMANN“, author's coll.

Germany: 1 male: „Nieder Weser Wienbäke Reitbruch Lichtfang, 15 VIII 1950, E. JÄCKH“, author's coll. 1 female: „Nieder Weser Oyter-Moor Lichtfang, 23 VIII 1950, E. JÄCKH“, author's coll.

Poland: 1 male from Bielinek n. Odrą, VIII, author's coll. 2 males from Puszcza Kampinoska, Wydma Łuże, 22 VIII 1950, author's coll. 57 males and females from Podgórk, distr. Kraków, 25 VIII — 4 IX 1945—1951, author's coll.

GROUP 6

Group type: *Crambus dumetellus* (HBN.)

I include here only one species viz. *Crambus dumetellus* (HBN.). In external appearance this species is somewhat similar to such species as *C. pratellus* (L.) or *C. ericellus* (HBN.) In the genitalia *C. dumetellus* (HBN.) differs very much from other species of the genus *Crambus* F. s. str. In male genitalia there occurs on valva a ventral, strongly sclerotized fold not separated from the valva. It may be considered as the pars basalis. On the ventral side of the valva there is a strong shovel-like process.

***Crambus dumetellus* (HÜBNER, 1810—1813)**

[Pl. XXVIII, fig. 2, pl. L, fig. 6, pl. LXIII, fig. 7—8]

? *Phalaena Pascuella* SCOPOLI, (nec LINNAEUS), 1763, Entomologia Carniolia: 244.

Tinea pratella HÜBNER, (nec LINNAEUS), 1796, Samml. Eur. Schmett.: 27, pl. 5, fig. 29.

Tinea dumetella HÜBNER, 1810—1813, Samml. Eur. Schmett.: pl. 58, fig. 389 ♂, fig. 390 ♀.

Chilo Dumetellus GERMAR & ZINCKEN, 1817, Magaz. Entomol. 2: 54.

Argyroteuchia Dumetalis HÜBNER, 1825, Verz. Bek. Schmett.: 364.

Agriphila pratalis HÜBNER, 1825, Verz. Bek. Schmett.: 365.

Crambus Dumetellus Stephens, 1832, Illustr. Brit. Entomol., *Haustellata* 4: 321.

Antennae brown, in male slightly serrated from below, in female setaceous. Palps at sides brown from outside, from inside sometimes lightened, at the base white underneath. Frons brownish, a little convex, rounded. Patagia brown, sometimes lighter yellow in the middle. Head varies in colour from brown to greyish yellow. Thorax yellowish-brown or brown. Tegulae brown. The length of the fore wing varies from 9,5 to 12 mm, the width from 3,8 to 4,5 mm. Costal margin straight, apex sharply pointed, outer margin beneath apex strongly incised, underneath the middle of the wing slightly bent. The ground of the fore wing brown, slightly

lustrous. Basal stripe white, not very wide, slightly widening toward the outer margin, at the end obliquely truncated in its upper part, pointed. It reaches to $\frac{2}{3}$ of the wing length and is prolonged by a similarly coloured, oval spot. On its lower part it is provided with a tooth. On the costal margin a white streak reaching to $\frac{1}{2}$ of the wing length. This streak is divided from the basal stripe by a thick brown line. Several silvery-grey lines, above and under the spot prolonging the basal stripe. Outer band sharply patterned, underneath costal margin oblique toward the outer margin, above the middle of the wing strongly angled toward the base. The outer band silvery, and bordered brown from the inner side. At the apical angle lies a white triangular spot adhering to the outer margin which is in this place marked with black. The field between the outer margin and the band, under the incision of the outer margin, silvery scaled, having therefore a different coloration than the field on the inner side of the band. On the outer margin, under the incision, several small black dots. Cilia on the outer margin brown, lustrous, underneath the apex white at its base. Hind wings with a slight lustre, brownish-grey, with paler greyish cilia.

ab. *depunctellus* STRAND, 1902, Nyt. Mag. Naturv. Kristiania 40: 171.

Smaller specimens, without dark spots at the outer margin of the fore wing. From Bosekop and Kaafjord (Norway).

subsp. *plumbatellus* OSTHELDER, 1939 [pl. LXIII, fig. 8]

Crambus dumetellus var. *plumbatellus* OSTHELDER, 1939, Mitt. Münch. Ent. Ges. 29: 17.

A form from the peat-bogs of Bavaria characteristic by a strong darkening of the white desing of the fore wings.

Crambus dumetellus (HBN.) is somewhat similar externally to *C. ericellus* (HBN.) and *C. pratellus* (L.), nevertheless it differs considerably from these two. Easy to distinguish from *C. ericellus* (HBN.) by the presence of a white streak on the costal margin at the base of the wing and by a strong incision of the outer margin, which lacks in *C. ericellus* (HBN.). From *C. pratellus* (L.) it differs by the strong incision on the outer margin; besides *C. pratellus* (L.) has the field beneath the

incision of the outer margin and between the outer margin and outer band similarly coloured as the field on the inner side of the band, while in *C. dumetellus* (HBN.) this field is silvery scaled, having therefore different coloration than the field on the inner side of the band.

By its genitalia *C. dumetellus* (HBN.) constitutes alone a very distinct group. Pars basalis of the male [pl. XXVIII, fig. 2] does not occur in its typical form. Instead, here the strongly sclerotized dorsal angle of valva may be considered as pars basalis. Ventral part of membrana valvae externa very strongly sclerotized, changes into a very strong, big, shovel-like ventral process. The remaining part of valva transparent. Uncus long, narrow, ended with a delicate hook. Gnathos slim, somewhat more narrow than uncus, as long as the latter, rounded at the end, slightly widened. Tegumen narrow, its dorsal edge corresponds to the half length of uncus. Saccus roundish. Aedeagus as long as the whole copulatory apparatus. The apical part very strongly narrowed, armed with strong dorsal thorn. One rather small cornutus.

Female [pl. L, fig. 6] lacks gonapophyses anteriores. Lamella subgenitalis fused with ostium bursae. Ductus bursae without any loop, in the middle without a strongly sclerotized stripe. Bursa copulatrix transparent with two small star-like signa.

This species, generally confined to the lowland, is probably Palaearctic in its distribution. In Europe widely distributed. In the Alps it reaches 2000 m, in Tatry Mts. I observed it on 1800 m. In high altitudes, however, it occurs rather in single specimens, while to 1000—1200 m the populations are very numerous. It appears in various localities, dry as well as wet. Flies in June and July. Caterpillar feeds on grasses.

Examined material:

France: 1 male: „Roche de Rame Htes. Alpes, 11—20 VI 1946, CH. FISCHER, 900—1400 m“, author's coll.

Germany: 31 males and females: „Bav. alp. Kochel 600 m Moos, 5—28 VI 1950, L. OSTHELDER leg.“ (typical form and subsp. *plumbatellus* Osth.), author's coll.

Austria: 1 male and 1 female: „9 V [and] 12 V 1943, Ulrichsberg Kärnten 1000 m, leg. THURNER“, author's coll.

Italy: 2 males: „Aosta Fiery, VII 1936, A. FIORI“, author's coll. 1 male:

„Gorizia Selva di Tarnova, 24 VI 1932, A. FIORI“, author's coll. 1 male:
 „Piemonte Gressonay, VII 1935, A. FIORI“, author's coll.

Poland: 4 males and females „Sudety Duszniki“, author's coll. 2 males and 1 female from Podgórk, distr. Kraków, 2 VI 1946, author's coll. 24 males and females from Dulowa ad Trzebinia, distr. Chrzanów, 31 V — 19 VI 1949—1952, author's coll. 12 males and females from environs of Kraków, 4 VI — 17 VI, 1950—1951, author's coll. 21 males and females from Beskidy Mts.: Rytro, Krynica (distr. Nowy Sącz), ca 700 m, 12—20 VI 1950—1953, author's coll. 11 males and females from Tatry Mts.: Zakopane ca 900 m, Czerwona Przełęcz ca 1300 m, Hala Ornak ca 1100 m, VI—VII 1951—1953, author's coll.

USSR: 1 male: „Mińsk“, author's coll. 2 males from Wołczków — Western Podolia, coll. TOLL.

GROUP 7

Group type: *Crambus pratellus* (L.).

One European species *C. pratellus* (L.) belongs here. In its design of the fore wings it is rather similar to the species of previous groups, but it differs from them very much by its genitalia. In male genitalia the pars basalis absent. On the ventral side of valva there is a strongly sclerotized fold, a little similar to that in *Crambus perlellus* (SCOP.) and *C. rostellus* LAH. Aedeagus with a single cornutus. Vesica terminated by a hook. In female genitalia ductus bursae is bent similarly as in *C. perlellus* (SCOP.) Because of this common feature I place the species in question near the group *C. perlellus* (SCOP.), I think, however, that the bending of ductus bursae in female and strongly sclerotized fold on valva in male genitalia are probably convergent features.

Crambus pratellus (LINNAEUS, 1758)

[Pl. XXVIII, fig. 1, pl. XLIX, fig. 5, pl. LXIV, fig. 1—8]

Phalaena Tinea Pratella LINNAEUS, 1758, *Systema Naturae* 10 ed.: 824.

Tinea pratella FABRICIUS, 1794, *Entomol. Systematica* 3: 294.

Crambus pratorum FABRICIUS, 1798, *Suppl. Entomol. Systematicae*: 471.

Palparia pratea HAWORTH, 1811, *Lepidoptera Britannica* 3: 488.

Chilo pratellus GERMAR & ZINCKEN, 1817, *Magazin Entomol.* 2: 56.

Argyroteuchia Pratalis HÜBNER, 1825, *Verz. Bek. Schmett.*: 364.

Crambus pratellus DUPONCHEL, 1836, *Hist. Nat. Lép. France* 10: 54, pl. 269, fig. 3.

Antennae in male grey or brown, weakly serrated, in female setaceous, whitish and more or less ringed brown. Palps in male grey-brown, in female whitish, at sides darkened brownish. Frons convex, rounded, in male grey or brown, in female whitish, sometimes darkened with greyish. Head, patagia, tegulae and thorax in male grey to brownish, in female snow-white to dirty whitish. The length of the fore wing varies from 7,5 to 12 mm, the width 3—4,5 mm. Costal margin delicately bent outwards. Apex pointed. Outer margin underneath the apex rather distinctly incised but much less than in *Crambus dumetellus* (HBN.). The coloration of the fore wing is a very variable feature. It shows very strong sexual dimorphism. In male ground of the fore wing grey-brownish, however, sometimes there occur specimens with very light ground. In female ground of the fore wing white, so that design contrasts very slightly with ground of the wings. Sometimes ground of the fore wings in females darkened, and those specimens resemble light-coloured males. Basal stripe of the fore wing narrow, pointed at its end, below with distinct teeth. Below the costal margin a white streak touching the basal stripe at base of the wing. End of this streak connected with the end of basal stripe with an oblique distinct dark streak. Costal streak and basal stripe enclosed with dark. Between basal stripe and outer band there is an oval spot, coloured similarly as the stripe. Above and below this spot there are silvery lines enclosed by dark scales. Outer band similar as in *C. dumetellus* (HBN.), sharply angled, whitish, or silvery, at the inner side bordered with dark. Below the apex, near the outer margin, a white triangular spot. Cilia in this place at the base distinctly whitish. Below the incision of outer margin three to four dark small spots at the margin, sometimes bordered with white or yellowish. Sometimes the ground of fore wing in males is strongly darkened, so that pale costal streak, and silvery lines above and below the pale spot prolonging the basal stripe, partly disappear.

Sometimes basal stripe is a little darkened, and its colour is not white but dirty yellowish-whitish. The cilia on the outer margin of the fore wings grey-brownish, almost always with distinct lustre. In females (because of strongly lighter ground) the design is obliterate. Basal stripe nearly disappears on the white ground. The dark line-like bordering of basal stripe and dark streak which connects the end of the stripe and the end of the light-coloured costal streak are only slightly discernible. Dark spots at the outer margin are well developed. Cilia below the apex white, below the incision golden with distinct lustre. As I mentioned, sometimes there are females with darkened ground of the fore wings, then the design of the wings is normally developed.

Montane forms of *C. pratellus* (L.) are generally smaller than the typical form. Also specimens from Great Britain, and Danmark are small, and darker than the typical ones.

C. pratellus (L.) has also a tendency to form races, specimens of which, the males as well as the females, are white. Besides this, as I mentioned before, the lighter males are sporadically met among the typical form of *C. pratellus* (L.). BILOSOV in his paper (1931) states that in the environs of Winnica (Podolia) there occurs *Crambus pratellus* var. *sibiricus* ALPH. As FILIPJEV (1935) proved, *Crambus sibiricus* ALPH. is a species different from *Crambus pratellus* (L.) and distributed in North-East Siberia. I think that the presence of this species in Europe is very doubtful, and that BILOSOV dealt with a pale form of *C. pratellus* (L.). Therefore I do not include *C. sibiricus* ALPH. in the European fauna.

Also, most probably, *Crambus nemorellus* (HBN.) is nothing else but the whitish form of *C. pratellus* (L.).

ab. *nemorellus* HÜBNER, 1810—1813.

Tinea nemorella HÜBNER, 1810—1813, Samml.: Europ. Schmett. pl. 65, fig. 384.

Chilo lathoniellus GERMAR & ZINCKEN, 1817, Magazin Ent. 2: 60.

Argyroteuchia Enemoralis HÜBNER, 1825, Verz. Bek. Schmett.: 364.

Crambus Nemorellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 55.

The specimens of males with fore wings lightened to white.

ab. *egregiellus* REBEL, 1915, Rovart. Lap. 22: 184.

Here was described one male from Nagy-Nyir (Hungary) with the ground of the fore wings light orange-yellow without the dark suffusion and with widened longitudinal lines. On hind wings there is a distinct dark band running along the margins.

subsp. *alfacarellus* STAUDINGER, 1859, Stett. Ent. Zeit.

20: 221 [pl. LXV, fig. 6].

It is an Iberian race of *C. pratellus* (L.). Males of this race as well as females have fore wings white. *C. pratellus* subsp. *alfacarellus* STGR. is reported by SZENT-IVÁNY (1942) from Carpathians. It must be a mistake because a geographical subspecies cannot be distributed in Sierra Alfacar and the Carpathians. This Carpathian „*alfacarellus*“ is either a race analogical to subsp. *alfacarellus* STGR. or the specimens determined in the work of SZENT-IVÁNY as subsp. *alfacarellus* STGR. are sporadically occurring whitish males, which, as I stated above is quite probable.

subsp. *altivolens* SCHAWERDA, 1913, Verh. Zool.-bot. Ges. Wien, 63: 167.

A form smaller than the typical one. The pale design of the fore wings reduced to the narrow basal stripe. This form flies on the level of 2000 m in the mountains of Bosnia (Maglić). As I mentioned earlier, analogical forms appear in Great Britain and Denmark.

Lighter specimens of *C. pratellus* (L.) are somewhat similar to *C. uliginosellus* (ZELL.) but they are easily distinguished by the coloration of hind wings which are white in *C. uliginosellus* (ZELL.) and dark brown in *C. pratellus* (L.). Cilia of the hind wings is white in *C. uliginosellus* (ZELL.) not contrasting to the ground of the wing while in *C. pratellus* (L.) its light coloration strongly contrasts to the dark ground of the wings.

Male genitalia [pl. XXVIII, fig. 1]: uncus strongly bent, ended with a prong. Gnathos very narrow, dagger-like. Tegumen rather wide. Saccus triangular. Valva rather wide, pointed at the end, bent upwards. Pars basalis absent. Membrana valvae externa widely ventrally strongly sclerotized. At the ventral edge of valva there is a narrow, strongly sclerotized fold, extending from the base of valva to its end, and

bent there. Aedeagus long, narrow. Cornutus single. Vesica ended with a strong thorn.

Female genitalia [pl. XLIX, fig. 5]: ostium bursae wide, ductus bursae behind ostium bursae bent, further on strongly sclerotized, longitudinally 1.bbed, with a loop before bursa copulatrix. The edges of ductus bursae on this loop are list-like strongly sclerotized. Bursa copulatrix of delicate membrane. Two small, star-like signa.

C. pratellus (L.) is a Palaearctic element very widely distributed in Europe. In the mountains it reaches to 2000 m, but not everywhere, for in the Tatry Mts. it reaches only to 1500 m. It appears from May to August in various regions, dry, as well as wet. The caterpillar lives on various grasses as *Aira caespitosa* L. etc.

Examined material:

Spain: 8 males (subsp. *alfacarellus* STGR.): „1891 Hispan. s. Bilbao Sbd.“, coll. I. Z. P. A. S., Warszawa and author's coll.

France: 2 males: „Mulhouse Ht.-Rhin, 25 V 1948, Ch. FISCHER“ author's coll. 1 male and 1 female: „Trois Epis Turckheime Ht.-Rhin, 19 V [and] 26 V 1948, 6—700 m, Ch. Fischer“, author's coll. 2 males: „Rainkopf Crête-Vosges Ht.-Rhin, 14 VII [and] 17 VII 1949 (1300 m), Ch. FISCHER“, author's coll. 1 male: „Riestal près Mulhouse Ht.-Rhin, 19 V 1950, CH. FISCHER“, author's coll. 2 males: „Nonnenbruch près Lutterbach Ht.-Rhin, 20 V 1934 [and] 11 VI 1949, CH. FISCHER coll.“, author's coll. 1 male and 1 female: „Sallanches et environs Ht.-Savoie, 3—25 VI 1950, coll. F. FISCHER“, author's coll.

Danmark: 5 males and females from Rungstedt, leg. LANGER, author's coll.

Great Britain: 3 males and 1 female: „Lephinmoore Argyll, 30 V 1951 [and] 12 VI 1951, e[x] c[oll]. P[ELHAM] C[LINTON] No. 5448, 5449, 5580 5581“, author's coll. 2 males and 1 female: „E. E. G. No. 3321, 3261, 5474, Camberley Surrey, V 1917—1919“, author's coll.

Germany: 12 males and females: „Süd-Pfalz Geilweilerhof, 8 VI — 23 VI 1949—1950, leg. DE LATTIN“, author's coll.

Austria: 10 males and females: „29 VI 1950, Kossiak 1700 m Karawanken, THURNER leg.“, author's coll. 3 males: „14 VI 1950, Obir 1400—1500 m Karawanken, THURNER leg.“, author's coll. 2 males „Klagenfurt Karawanken Kärnten, 3 V 1949 [and] 7 VII 1950, THURNER leg.“, author's coll. 1 male: „Sattnitz Kärnten, THURNER leg.“, author's coll.

Italy: 1 female: „Gemona Friani Italien, 18 VI 1950, coll. THURNER“, author's coll. 3 males: „Gorizia Selva di Tarnova, 22—28 VI 1932, A. FIORI“, author's coll. 1 female „Toscana Bollina, 12 VI 1929, A. FIORI“, author's coll. 1 female: „App. Pistoiese Bosco d. Teso, 21 VI 1931, A. FIORI“,

author's coll. 2 males: „Bologna Pontecchio, 4 VI 1932, A. FIORI“, author's coll.

Poland: 6 males and females from Sudety Mts., author's coll. 89 males and females from environs of Kraków: Podgórk, Przegorzały, Dolina Bolechowicka, Krzemionki, Las Wolski, Ojców, Dulowa, Grodkowice, V—VII 1947—1952, author's coll. 67 males and females from Beskidy Mts.: Mszana Dolna, distr. Limanowa, Jaworzyna ad Krynica 1100 m, Rytko 700 m, Radziejowa 1200 m, distr. Nowy Sącz, VI 1950—1953, author's coll. 28 males and females from Tatry Mts.: Dol. ku Dziurze 900 m, Dol. Strąyska 900 m, Mała Świnica 1300 m, Zakopane 900 m, Hala Ornak 1100 m, Przełęcz Iwaniacka 1440 m, Hala Gąsienicowa 1500 m, 23 VI — 29 VII 1946—1951, author's coll. 1 female from Chotel Czerwony, distr. Busko, 1 VI 1947, author's coll. 2 males and 1 female: „Poznań Dębina 21 V 1950 A. SZMYT leg.“, author's coll. 7 males and females from Kretowiny, distr. Morąg, 15—25 VII 1953, author's coll.

GROUP 8

Group type: *Crambus palustrellus* RAG.

I include here only one species *Crambus palustrellus* RAG. which is, by its genitalia, rather related to species of the group *Crambus perlellus* (SCOP.). Unfortunately, I have no females of *C. palustrellus* RAG., the possession of which would explain much better the degree of relation between the species of both these groups. In the design of the fore wings *C. palustrellus* (RAG.) is quite different from species of the next group having the design similar to that of *Crambus dumetellus* (HBN.) while species of the group *C. perlellus* (SCOP.) have the fore wings unicolour, without design. In the male genitalia pars basalis is not separated from valva. Ventrally valva with strong fold bent at its end but without teeth. Aedeagus with dorsal thorn at the end.

Crambus palustrellus RAGONOT, 1875

[Pl. XXVIII, fig. 5, pl. LXV, fig. 8]

Crambus palustrellus RAGONOT, 1875, Bull. Soc. ent. Fr.: 78.

Male: antennae brown, slightly serrated. Palps brown, whitish from above and below. Frons whitish, slightly convex.

Head whitish. Patagia brown at sides, in the middle whitish. Thorax brown-whitish. The length of the fore wing 7,5 mm. the width ca 3 mm. *C. palustrellus* RAG. is the smallest European species of the genus *Crambus* F. s. str. Costal margin slightly convex, apex pointed, outer margin distinctly incised. The ground of the fore wing with slight lustre, light-golden-brown. Basal stripe narrow, slightly widening toward the outer margin, near its end truncate from above, pointed, below with a very delicately break in the middle. As a prolongation of the stripe there lies a white, indistinct spot with fused margins. It touches the outer band. Under the costa there is a white, narrow streak, a little shorter than the basal one, merging at the end with the ground of the wing. The narrow, streak-like field between this streak and basal stripe is brown, distinctly darker than the ground of the wing. The basal stripe is bordered from below with brown scales. Underneath the spot prolonging the stripe there are three very narrow silvery lines bordered with the brown scales. The middle one touches the basal stripe in the point where it is delicately broken. Outer band arched, slightly angled, silvery, from the inner side bordered with brown line darker than the ground. Below the costal margin the colour of the band changes to white. In this place on the outer side of the band there is a white triangular spot with wide base; this spot touches the band. An oblong, white spot below the apex near the outer margin. The outer margin in this place is bordered with black, and cilia whitish. Underneath the incision at the outer margin five black little spots. Cilia on the outer margin with metallic lustre, golden, below the apex whitish. Hind wings grey-brownish with snow-white cilia.

Male genitalia [pl. XXVIII, fig. 5]: resembling in shape to some extent the genitalia of species from the group *Crambus perlellus* (SCOP.). Uncus slender, strongly pointed, not much shorter than gnathos. Gnathos slender, bent near the end, pointed. Tegumen wide. The border between tegumen and saccus slightly visible, but more distinct than in *C. perlellus* (SCOP.). Saccus square. The shape of the valva similar to that of *C. perlellus* (SCOP.) but the ventral strongly sclerotized fold is smooth, not provided with teeth as in *C. perlellus* (SCOP.).

Pars basalis developed as strongly sclerotized fold not detached from valva. Aedeagus a little longer than the whole copulatory apparatus, narrowed near the end, with a distinct, dorsal thorn which is absent in *C. perlellus* (SCOP.). Cornutus single, of different shape than in *C. perlellus* (SCOP.). It has the shape of a prong slightly curved outwards, with a straight base. The cornutus of *C. perlellus* (SCOP.) has the base strongly oblique.

C. palustrellus RAG. is a West European endemic, described from Gascogne. According to LHOMME's Catalogue (1935) it is known from the following districts of France: Hautes Alpes (La Grave), Gironde (env. de St.-Mariens), Landes (Dax), Basses-Pyrénées (Salies de Béarn, Mont-Binet), Hautes Pyrénées (Lannemezon), Pyrénées-Orientales (Font-Romeu), Var (Callian). It occurs from May to July on wet meadows.

Examined material:

Eight males from Gascogne coll. I. Z. P. A. S., Warszawa and author's coll.

GROUP 9

Group type: *Crambus perlellus* (SCOP.)

The species belonging here are very characteristic and differ in their external appearance from all other species of the genus *Crambus* F. s. str. Their fore wings are unicoloured without design; they are at most longitudinally darkened. The essential design of the species of the genus *Crambus* F. s. str., however, that is, the basal stripe and the outer band is completely absent in the species of the group in question. In their genitalia the species of the group *C. perlellus* (SCOP.) are somewhat related to those of the group *C. pratellus* (L.) and *C. palustrellus* (RAG.). In males there occurs on valva a ventral, strongly sclerotized serrated fold distinctly separated from the less sclerotized part of the valva. In females ductus bursae behind ostium bursae is distinctly bent. A very characteristic feature of the species of this group is the lack of

distinctly developed specific features in the structure of the genitalia. Two European species belong here, viz. *C. perlellus* (SCOP.) and *C. rostellus* LAH. *C. rostellus* LAH. was considered by some authors as only a form of the *C. perlellus* (SCOP.) just because of the lack of distinct genital differences between them. The studies of the specific seclusion in the group *C. perlellus* (SCOP.) is very difficult because of a great variability of the species belonging there. This variability comprises the coloration, design and size of the specimens as well as the genitalia. For example *C. perlellus* (SCOP.) forms very numerous races characteristic for various regions. Some of them, as for example subsp. *aurellus* ZERNY and subsp. *flavonitellus* ZERNY (from Persia and Atlas Mts.) have been considered recently by DE LATTIN (1951) as separate species. I do not make any decisive statement in this matter, for a very numerous material of the forms in question should be investigated in order to avoid any possible errors. Also, because of the not very numerous material, I do not name several forms which most probably are subspecies of *C. perlellus* (SCOP.). The question of the differentiation of *C. perlellus* (SCOP.) into subspecies in Europe can be solved only through very precise investigation, of a much more numerous material than this which is at present to my disposition.

Crambus perlellus (SCOPOLI, 1763)

[Pl. XXIX, fig. 1, pl. L, fig. 5, pl. LXVII, fig. 1—8, pl. LXVIII, fig. 1—2]

Phalaena Perlella SCOPOLI, 1763, Entomologia Carnioliæ: 243.

Tinea Perlella DENIS & SCHIFFERMÜLLER, 1775, Syst. Verz. Schmett. Wien. Geg.: 134.

Tinea argentella FABRICIUS, 1794, Entomol. Syst. 3: 296.

Tinea Dealbella THUNBERG, 1794, Dissert, Entomol. 7: 84.

Crambus argenteus FABRICIUS, 1798, Suppl. Entomol. Syst.: 471.

Palparia argentea HAWORTH, 1811, *Lepidoptera Britannica* 3: 486.

Chilo Perlellus GERMAR & ZINCKEN, 1817, Magazin Entomol. 2: 97.

Selagia Perlalis HÜBNER, 1825, Verz. Bek. Schmett.: 471.

Crambus Arbustorum STEPHENS, 1834, Illustr. Brit. Entomol.

Haustellata 4: 319.

Crambus argentellus STEPHENS, 1834, Illustr. Brit. Entomol. *Haustellata* 4: 319

Crambus dealbellus STEPHENS, 1834, Illustr. Brit. Entomol. *Haustellata* 4: 319.

Crambus perlellus DUPONCHEL, 1836, Hist. Nat. Lép. France 10: 114, pl. 274, fig. 2a.

Crambus rostellus TOLL, (nec DE LA HARPE) 1938, Spr. Kom. Fizjogr. PAU, 72: 143.

Antennae white from above, brownish from below; serrate in male, setaceous in female. Palps white, from below more or less darkened. Frons and head white, frons slightly convex, rounded. Patagia yellowish-white, lighter in the middle. Thorax and tegulae yellowish-white. The length of the fore wing varies from 8,5 to 13 mm, the width 3—4,5 mm. Costal margin generally delicately convex, sometimes straight. Apex of the male slightly pointed, that of the female more so. Outer margin of the female more oblique than that of the male. Fore wing strongly lustrous, white to yellowish-white, without a trace of design. Cilia on the outer margin white, somewhat lighter than the ground of the wing. Hind wing with slight lustre, white to grey-brownish. Cilia of the hind wings lustrous, white to grey-yellowish-white.

ab. *warringtonellus* STAINTON, 1849.

Crambus Warringtonellus STAINTON, 1849, System. Catalogue Brit. Tin. & Pter.: 1.

Crambus argyreus STEPHENS, 1834, Illustr. Brit. Entomol. *Haustellata* 4: 318.

Crambus lythargyrellus STEPHENS (nec HÜBNER), 1849, Illustr. Brit. Entomol. *Haustellata* 4: 318.

Crambus perlellus DUPONCHEL (nec SCOPOLI), 1836, Hist. Nat. Lép. France: pl. 274 fig. 2b.

Antennae, palps, frons, head, thorax, patagia and tegulae more or less grey-brown or olive-grey, darkened. Fore wing more or less darkened by dark streaks running alongside the veins. The coloration of these streaks varies, it is olive-grey, olive, olive-brown, or olive-brownish-yellowish. Sometimes these streaks are so well developed that the white ground of the wing vanishes almost completely.

ab. *obscurellus* OSTHELDER, 1939, Mitt. Münch. Ent. Ges. 29: 13.

One female from a peat-moor near Wasserburg (Bavaria), peculiar by its similarity to a large specimen of *C. rostellus*

LAH. Probably a form analogous to *C. perlellus* (SCOP.) subsp. *pseudorostellus* M.-R.

subsp. *pseudorostellus* MÜLLER-RUTZ, 1923, Schweiz. ent. Anz. 2: 19.

A subspecies described from the Alps (Fusio) 1300—1500 m above sea level. It is characteristic by very strong darkening of the fore and hind wings. Cilia of hind wings white-greyish. The specimens which I have from Aosta have the fore wings completely unicolour, olive-grey, similarly as in *C. rostellus* LAH.

The darkened forms of *C. perlellus* (SCOP.) are variable depending on the region and in many cases they certainly deserve the name of subspecies. As I wrote, however, in the diagnosis of the group *C. perlellus* (SCOP.) I have insufficient material to my disposition to be able to solve this problem. Therefore I only describe the particular forms without naming them. From Great Britain, from where *C. perlellus* ab. *warringtonellus* STT. was described, I have examined two forms differing very conspicuously. One of them has the fore wing 9,5 mm long, that is somewhat shorter than the mean length of the wing of typical *C. perlellus* (SCOP.). The ground of the wing is covered completely by an olive suffusion. The three specimens which I have in my collection bear the labels „Glandyfi, 24 VII 1950, E. C. P[ELHAM]-C[LINTON]“. The second form is distinctly smaller than the first one and resembles by its size the species *C. rostellus* LAH. The length of the fore wing of this form is 8,2 mm. The fore wing distinctly darker than in the former form, almost completely dark-olive-brown. Only a narrow streak below costal margin and several narrow streaks near the outer margin are dirty greyish-yellow. Cilia on the outer margin greyish. Hind wings brown-greyish with greyish cilia. Two specimens of this form have the labels: „Gullane Lothian, 12 VIII 1950, E. C. P[ELHAM]-C[LINTON]“. Another form is known from North Germany. Those are the specimens of normal size. The dark streaks of fore wings strongly developed, coloured olive-yellow-brown. Two specimens of this form bear the labels: „Wangerooge am Deich Aussen-seite, Lichtfang, 19 VI 1947, E. JÄCKH“ the next two: „Nieder

Weser Oyter Moor, 2 VII 1939, E. JÄCKH“. The specimen bearing the label: „Ostfries. Inseln, Wangeroog, Lichtfang, 3 VII 1949, E. JÄCKH“ differs a little from them. The ground of the fore wings is covered almost completely with a dark suffusion of similar colour as in the previously described specimens. Also cilia of the hind wings of this specimen is darker, grey, while in previous specimens it is dirty whitish. I collected similarly dark specimens though of a little different coloration at the foot of Tatry Mts. (Zakopane, 900 m). In a series of *C. perlellus* (SCOP.) collected on 1 VII 1950, consisting of about 100 specimens, about half of them were typical specimens with white fore wings and white cilia of hind wings and the rest of them darkened specimens. The darkened specimens show a various degree of darkening of fore wings, from specimens with weakly developed dark streaks to such with most uniform dark ground of the fore wings. Also in the coloration of cilia of hind wings there are visible intermediate stages from whitish to greyish. The dark streaks of the above described specimens are greenish-grey to olive-yellow-brown as in the specimens from North Germany. The remaining material of darkened specimens does not present any interesting forms. They were collected in Southern Palatinate, Sudety Mts. and other regions of Poland, and at Mińsk (USSR).

Summing up the above data, it is clear that the forms of *C. perlellus* ab. *warringtonellus* STT. from Great Britain, North Germany and Tatry Mts. differ from each other. It is difficult, however, to solve the question how to arrange them properly. Judging from the series collected in Tatry Mts. *C. perlellus* ab. *warringtonellus* STT. occurs in this region in more or less great percentage in the population of the typical form of *C. perlellus* (SCOP.). It is difficult in this case to say anything about subspeciacion. It is difficult, too, to assume anything on the specimens from Great Britain and Germany for I do not know whether in the regions where these specimens were caught the typical form occurs or not.

In other regions we have to do with characteristic subspecies of *C. perlellus* (SCOP.) (it is possible that those are distinct species) within which there is no differentiation into forms with light-coloured or darkened wings. We deal in such

cases either with a very light-coloured form (as for example the investigated series of 14 specimens from Manchuria) or with a strongly darkened one as *C. perlellus* (SCOP.) subsp. *pseudorostellus* M.-R., and Caucasian form or with yellow forms as *C. perlellus* (SCOP.) subsp. *aurellus* ZERNY from Elburs Mts. or *C. perlellus* (SCOP.) subsp. *flavonitellus* ZERNY from Atlas Mts.

Male genitalia [pl. XXIX, fig. 1]: uncus distinctly shorter than gnathos with slightly serrate dorsal protuberance; the shape of this was considered by PETERSEN (1924) as a feature distinguishing *C. perlellus* (SCOP.) from *C. rostellus* LAH. According to this *C. rostellus* LAH. was reported from various parts of Europe as from North regions by PETERSEN and from West Podolia by TOLL (1938). The big specimens with light coloured fore wings were considered as *C. rostellus* LAH. This was of course not right for *C. rostellus* LAH. is a high Alpine species; besides this the dorsal protuberance of uncus in male genitalia is an extremely variable feature and as such it has no taxonomical value at all. Accordingly HEYDMANN (1943) joined both species *C. perlellus* (SCOP.) and *C. rostellus* LAH. into one. He erroneously considered *C. rostellus* LAH. as a form of *C. perlellus* (SCOP.). *C. rostellus* LAH. in spite of the lack of distinct genital features which would distinguish it from *C. perlellus* (SCOP.) is a separate species (for detailed data see the description of *C. rostellus* LAH.). Gnathos strongly narrowed near the end, rounded. Tegumen wide Saccus more or less square. The distinct list-like separation between saccus and tegumen wanting. Pars basalis does not appear as a typical process on valva. The dorsal part of the valva, however, has at the base a fold curved inside. On the drawing of male genitalia of *C. rostellus* LAH. this fold is curved in and on the drawing of those of *C. perlellus* (SCOP.) it is curved outwards. The ventral part of valva has a very strongly sclerotized serrate fold. This fold does not reach the end of valva but bends visibly before the end of it. The extent of bending of this fold is probably a feature distinguishing *C. perlellus* (SCOP.) from *C. rostellus* LAH. The fold of *C. perlellus* (SCOP.) is much more bent upwards, than that of *C. rostellus* LAH. Beside the number of teeth in *C. perlellus* (SCOP.) is generally greater (14—17)

than that in *C. rostellus* LAH. (8—10). Aedeagus somewhat longer than that of *C. rostellus* LAH., longer than the whole copulatory apparatus. Single cornutus somewhat longer than the width of aedeagus.

Female genitalia [pl. L, fig. 5]: ductus bursae behind the ostium bursae strongly bent. Ostium bursae funnel-like, strongly accreted to lamella subgenitalis. Ductus bursae with a loop, with a strongly sclerotized streak in the middle. Bursa copulatrix transparent with two star-like signa. Female apparatus strongly similar in its structure to that of *C. rostellus* LAH.

Crambus perlellus (SCOP.) is a Palaearctic element. It is widely distributed. It appears as well in lowlands as in mountains. In Tatry Mts. it reaches 1500 m. In the Alps on high levels it occurs as the subsp. *pseudorostellus* M.-R. *C. perlellus* (SCOP.) is rather an eurytopic element, but it prefers wet regions. I collected it in dry regions, but I have not met it in distinctly xerothermic ones. It appears from the middle of June to August, sometimes the specimens occur still in the first days of September. Caterpillar feeds on various grasses. It pupates after hibernation.

Examined material:

Great Britain: 2 males: „E. E. G. No. 1138 [and] 1612 Camberley Surrey, 5 VII 1915 [and] 20 VII 1919“, (typical form), author's coll. 3 males: „Glandyfi, 24 VII 1950, E. C. P.-C.“, (small darkened form), author's coll. 2 males: „Gullane Lothian, 12 VIII 1950, E. C. P.-C.“, (small darkened form), author's coll.

Finland: „Finlandia Otava Umgb. (Mikkeli), 28 VI 1935, coll. BRANDT“, (typical form), author's coll.

Germany: 20 males and females: „Süd-Pfalz Geilweilerhof, 18—29 VI 1950, leg. DE LATTIN“, (typical form, and ab. *warringtonellus* STT.), author's coll. 6 males and females: „5 VI 1949, Mecktersheim Pfalz, Jöst“, (typical form), author's coll. 7 males and females: „2—13 VII 1949, Ausweiler, Jöst L.“ (typical form and ab. *warringtonellus* STT.), author's coll. 1 male: „Süd-Pfalz Alberweiler, 20 VI 1949, leg. DE LATTIN“, (typical form), author's coll. 2 males: „Ostfries Inseln Wangeroog, Lichtfang, 3 VII 1949, E. JÄCKH“, (a darkened form related to ab. *warringtonellus* STT.) author's coll. 1 male: „Wangerooge am Deich Aussenseite, Lichtfang, 19 VI 1947, E. JÄCKH“, (a darkened form related to *warringtonellus* STT.), author's coll. 2 males: „Nieder Weser Oyter-Moor, 2 VII 1939, E. JÄCKH“, (a darkened form related to ab. *warringtonellus* STT.), author's coll.

Hungary: 1 male: „Szomo Inok Ried., 1909 VII“, (typical form), coll.

TOLL. 1 male: „Barlandgliget, SCHMIDT, VII 1916“, (typical form), coll. TOLL.

Austria: 1 male: „Styria Sup. Laimbach, 27 VII 1910, ZERNY“, (typical form), author's coll. 1 male: „5 VII 1950, Kärnten Massauer Bg., coll. THURNER“, (typical form), author's coll. 3 males: „4 VII, Haimbach Kärnten, leg. THURNER“, (typical form), author's coll. 9 males and females: „Austria superior Umgeb. v. Linz, 1 VIII 1939, Jos. KLIMESCH“, (typical form), coll. TOLL.

Italy: 1 male: „Trento Val Genova, 13 VII 1949, A. FIORI“, (typical form), author's coll. 1 male: „Trentino val Genova, 24 VI 1932, A. FIORI“, (typical form), author's coll. 1 male: „Trentino Pinzolo, 9 VIII 1924, A. FIORI“, (typical form), author's coll. 1 female: „Gorizia Selva di Tarnova, VI 1934, A. FIORI“, (typical form), author's coll. 1 female: „Veneto Paluzzo, 26 VII 1923, A. FIORI“, (typical form), author's coll. 4 males: „Aosta Fiery, VII 1936, A. FIORI“, (subsp. *pseudorostellus* M.-R.), author's coll.

Poland: 8 males and females from Łańsk-Rybaki, distr. Olsztyn, 24 VII 1952“, (typical form and ab. *warringtonellus* STT.), author's coll. 5 males and females from Kretowiny, distr. Morąg 18—28 VII 1953, (typical form and ab. *warringtonellus* STT.), author's coll. 6 males and females: „Poznań Dębina 9—10 VII 1950, A. SZMYT leg.“, (ab. *warringtonellus* STT.), author's coll. 1 male from Bogucice, distr. Pinczów 13 VII 1952 (ab. *warringtonellus* STT.), author's coll. 4 males „Sudety Duszniki, VII 1936“, (typical form and ab. *warringtonellus* STT.), author's coll. 62 males and females from environs of Kraków: Kostrze, Mydlniki, Grodkowice, VI—IX, 1945—1949, author's coll. 2 males: „Rudze and Zator, distr. Oświęcim VII 1949, leg. MIODOŃSKI“, (typical form), author's coll. 1 male from Jasło—Gorajowice 28 VII 1943 (typical form), author's coll. 112 males and females from Tatry Mts.: Zakopane 900 m, 28 VI 1950, (typical form and ab. *warringtonellus* STT.), author's coll.

USSR: 3 males: „Mińsk 15 VII“, (ab. *warringtonellus* STT.), author's coll. Several males and females from Western Podolia (Obizowa, Wolezków, Krzywce, Dźwinogród, VI—VII, 1934—1937), (typical form and ab. *warringtonellus* STT.), leg. and coll. Toll. 1 male: „Karangom [Caucasus] 1800 m, 18 VII 1935, leg. DR. R. WOJTUSIAK“, (a strongly darkened form), author's coll.

Crambus rostellus DE LA HARPE, 1855

[Pl. XXIX, fig. 2, pl. L, fig. 4, pl. LXVIII, fig. 3, 4]

Crambus rostellus DE LA HARPE, 1855, Fauna Suisse, Lep. 5: 55, fig. 6.

Crambus monochromella HERRICH-SCHÄFFER, 1856, Syst. Bearb. Schmiett.

Eur. 6: 145, Sppl. 164.

Antennae brown, serrate in male, setaceous in female. Palps brown. Frons brown, slightly convex, rounded. Head,

patagia, thorax and tegulae brown. The length of the fore wing 9—10,5 mm, the width 3,5—3,8 mm. Fore wing relatively shorter and wider than that of *C. perlellus* (SCOP.). Costal margin delicately bent outwards, apex rather pointed, outer margin very delicately bent outwards, slightly oblique. Ground of the fore wing lustrous, brownish-grey, or with delicate olive tinge. No design on the fore wing. In the outer part the ground of the wing sometimes lighter. Dark spots at the outer margin absent. Cilia on the outer margin somewhat lighter than the ground of the wing, lustrous, uniformly greyish. Hind wings brownish-grey with slight lustre. Cilia of the hind wings of male similarly coloured as the ground of the wing, that of female distinctly lighter, whitish.

Male genitalia [pl. XXIX, fig. 2] very similar in its structure to that of *C. perlellus* (SCOP.). Strongly sclerotized ventral comb on valva in *C. rostellus* LAH. is less bent upwards at its end than in *C. perlellus* (SCOP.); besides, the number of teeth on this comb is 8—10 in *C. rostellus* LAH. while *C. perlellus* (SCOP.) has 14—17 of them. Nevertheless, as I mentioned while describing *C. perlellus* (SCOP.), I still do not consider these features by which these two species differ from each other as decisive ones. I investigated too little specimens of *C. rostellus* LAH. to be able to state it with certainty. It should be mentioned that the male genitalia of one as well as the other species vary individually in their structure.

Genitalia of the female [pl. L, fig. 4] delusively similar to that of *C. perlellus* (SCOP.). Thus far I could not find stable differences in female genitalia of these two species.

In spite of the lack of genital differences I consider beyond doubt *C. rostellus* LAH. as a separate species. In this case such features are decisive as the shape and coloration of the wings. Its geographical distribution also speaks for it. It is not a geographical race of *C. perlellus* (SCOP.) for it occurs as well in the Alps as in Caucasus. Neither is it an ecological race of *C. perlellus* (SCOP.) (when vertical distribution is considered) for in higher places *C. perlellus* (SCOP.) presents its own races quite different from *C. rostellus* LAH. *C. rostellus* LAH. is a high-Alpine element, distributed in Europe in the Alps and in Caucasus. The specimens investigated by me from

Caucasus are somewhat darker than the Alpine ones, but for the time being I do not establish for them the name of separate subspecies. I have only two specimens from Caucasus. *C. rostellus* LAH. is also reported from the mountains of Central Asia.

Examined material:

Alps: 1 male: „6' VII 1874, Bergün“, author's coll. 2 females: „Engadin“, author's coll. 1 male: „Engadin 1869“, author's coll. 1 male: „Zermatt 2200 m, 1—24 VII 1935, H. G. AMSEL“, author's coll. 1 male: „Tirol Ötztal Rosenberg 2400 m, 8—10 VIII 1942, J. KLIMESCH“, author's coll. Caucasus: 2 males: „Caucasus“, author's coll.

GROUP 10

Group type: *Crambus hortuellus* (HBN.)

This group, in which I place one European species viz. *C. hortuellus* (HBN.) is, similarly as the following group, rather distinct from the typical forms of the genus *Crambus* F. s. str. On fore wing the basal light-coloured stripe is absent. Inner band is also absent, or present only in very slight traces. In male genitalia pars basalis has the shape of a wide strong fold bordered from the valva by a distinct list. There is a second ventral process on valva. In female genitalia ostium bursae has the shape of a deep bag with two hooks at its opening.

Crambus hortuellus (HÜBNER, 1796)

[Pl. XXIX, fig. 4, pl. L, fig. 3, pl. LXVI, fig. 3—7]

? *Tinea Chrysonuchella* DENIS & SCHIFFERMÜLLER, 1775, (nec SCOPOLI)

Syst. Verz. Schmett. Wien. Geg.: 134.

Tinea hortuella HÜBNER, 1796, Samml. Eur. Schmett.: 29, pl. 7, fig. 46.

Palparia hortuea HAWORTH, 1811, *Lepidoptera Britannica* 3: 490.

Chilo Hortuellus GERMAR & ZINCKEN, 1817, *Magazin Entomol.* 2: 62.

Chrysoteuchia Hortalis HÜBNER, 1825, Verz. Bek. Schmett.: 366.

Crambus hortuellus STEPHENS, 1834, *Illustr. Brit. Entomol. Haustellata* 4: 322.

Crambus montanellus STEPHENS, 1834, *Illustr. Brit. Entomol. Haustellata* 4: 323.

Antennae brown, serrate in male, setaceous in the female. Palps lustrous, brown or grey-brown. Frons slightly convex, smooth, rounded, lustrous, brownish; in females whitish. Head, patagia, thorax and tegulae lustrous, in male brownish or greyish, in female whitish. The length of the fore wing varies from 9—12 mm, the width from 3,5 to 5 mm. Costal margin very delicately convex, or almost straight. Apex rather pointed, outer margin below the apex very distinctly concave, or almost straight. No sexual dimorphism in the shape of the fore wing. Ground of fore wing greyish-brownish. Along the veins distinct creamy streaks, which in females are very strongly developed. Sometimes almost whole ground of the wing is covered by strong developed creamy streaks, which above the dorsal margin merge with each other. Inner band absent. Sometimes in females there are very indistinct traces of the inner band. The outer band distinct, narrow, brown at the inner side, silver at the outer side. This band is strongly arched toward the outer margin. Below costal margin silvery colouring of the outer part of band changes to creamy. Near apex there is an indistinct silvery-coloured streak, parallel to the outer band in this place. This streak connects the costal margin with the outer margin, and establishes a small apical field. The place between outer band and outer margin, and below the bending of the outer band is yellow. In this place at the outer margin three distinct, black, small dots. Cilia on the outer margin with strong metallic lustre, golden, below the apex narrowly lightened to creamy at the base. Hind wings brownish-grey, with very slight lustre. Outer margin bordered with dark. Cilia of the hind wings greyish to whitish, with lighter streak of the basal scales.

ab. *cespitellus* (HÜBNER, 1796) [pl. LXVI, fig. 6].

? *Tinea strigella* FABRICIUS, 1794, Entomol Syst. 3/2: 297, [s. ZELL.].

Tinea cespitella HÜBNER, 1796, Samml. Eur. Schmett.: 29, pl. 7, fig. 45.

? *Crambus strigatus* FABRICIUS, 1798, Suppl. Entomol. Syst.: 472, [s. ZELL.].

Palparia cespitella HAWORTH, 1811, *Lepidoptera Britannica* 3: 390.

Chrysoteuchia caricetalis HÜBNER, 1825, Verz. Bek. Schmett.: 366.

Crambus cespitellus STEPHENS, 1834, Illustr. Brit. Entomol. *Haustellata* 4: 322.

Crambus hortuellus ab. *cespitellus* DUPONCHEL, 1836, Hist. Nat. Lép. France: pl. 271, fig. 1a.

Specimens in which the ground of the fore wings is lightened to pale yellow, and the dark ground between the creamy streaks tends to disappear completely. The design and colouring of the outer part of the wing normally developed.

Because in HÜBNER'S Sammlung Europäischer Schmetterlinge this form has the No. 45, and the typical *C. hortuellus* (HBN.) has the No. 46 (plate VII), several authors, consider *cespitellus* (HBN.) as the typical form, and *hortuellus* HBN. as a form of it. This is, however, not right for several reasons. First, in the case when several forms of one species are described on one page or table it makes no difference which one will be considered as typical. The question of priority is important when the time is concerned and in this case the drawings on a table were published simultaneously. Second: the name *hortuellus* HBN. as the typical form of this species was generally accepted and used till now by the majority of authors and the recognition of ab. *cespitellus* HBN. as the typical one would only cause a quite unnecessary confusion.

In Southern Poland there occurs in Beskid Sądecki an ecological race in the higher parts of these mountains. Up to 600—800 m the specimens of *C. hortuellus* (HBN.) are of normal size. However, on the summits 900—1200 m high this species occurs in a dwarfed form.

It is interesting that in Tatry Mts. where *C. hortuellus* (HBN.) occurs to 1700 m, all specimens are of normal size.

Male genitalia [pl. XXIX, fig. 4]: uncus 4—5 times wider than gnathos; pointed at the end. Gnathos of the same length as the uncus, very narrow, dagger-like, pointed. Tegumen rather narrow. Saccus oval. Valva with pars basalis of the shape of a strong, wide fold. This fold is distinctly bordered from valva by a list. Alongside the valva runs a distinct fold which ends as second process of valva, near its end. Valva at its end narrow, rounded. Aedeagus a little shorter than the whole apparatus, wide. There are 4—7 strong cornuti situated near each other. In this species cornuti often fall out after copulation, so that we may find specimens with 3, 4 or 5 cornuti.

Female genitalia [pl. L, fig. 3]: lamella subgenitalis very narrow, accreted with large ostium bursae. Ostium bursae has the shape of a deep, wide bag with two distinct prongs at the opening. Gonapophyses anteriores very narrow and long. Ductus bursae short, slightly sclerotized. Two star-like signa on bursa copulatrix; the first of them is visibly smaller than the second one.

Crambus hortuellus (HBN.) is an Euro-Siberian element, distributed very widely in Europe. It appears in lowlands and mountains (up to 1900 m), in dry and wet regions. It appears from June to August. The caterpillar feeds on grasses.

Examined material:

France: 1 male: „Ht. Pyrénées Vel. Camp. Bieth. Gèdre, 10 VII 1935, 1800 m, CH. FISCHER“, author's coll. 1 male: „Trois Epis Turkheim Ht.-Rhin, VI 1947, 600—700 m, CH. FISCHER“, author's coll. 1 male: „Ascoule Pujal, 25—30 VI 1949, 1300 m, CH. FISCHER“, author's coll. 1 male: „Sallanches et environs Ht.-Savoie, 3—25 VI 1950, 1000—1400 m, coll. CH. FISCHER“, author's coll. 1 female: „Nonnenbruch près Lutterbach Ht.-Rhin, 11 VI 1949, CH. FISCHER“, author's coll.

Germany: 8 males: „Süd-Pfalz Böhler-Bruch, 29 VI 1949, leg. DE LATTIN“, author's coll. 30 males and females: „Bav. alp. Kochel, 600 m, 26 VI — 16 VII 1950, L. OSTHELDER leg.“, author's coll. 3 males: „Süd-Pfalz Geilweilerhof, 26 VI — 16 VII 1950 leg. DE LATTIN“, author's coll.

Austria: 1 male: „Austria superior Wegscheid b. Linz, 5 VII 1928, J. KLIMESCH author's coll. 1 male: „Austria superior Ebelsberg b. Linz, 15 VII 1940, Jos. KLIMESCH“, author's coll. 1 male: „2 VII 1949, Klagenfurt Karawanken Kärnten“, author's coll. 1 male: „6 VI 1943, Loibtal Karawanken Kärnten“, author's coll. 1 male: „18 VII 1949, Gr. Fragant Kärnten, 1300 m, leg. THURNER“, author's coll.

Italy: 2 males: „App. Modenese Sestola, 27 VI 1948, A. FIORI“, author's coll. 1 female „Trentino Pinzolo, 26 VI 1927, A. FIORI“, author's coll.

Poland: 4 males from Kretowiny, distr. Morag, 18—28 VII 1953, author's coll. 2 males and 1 female: „Poznań Dębina, 9 VII 1950, A. SZMYT leg.“, author's coll. 3 males from Sudety Mts., author's coll. 1 female from Bogucice, distr. Pińczów, 13 VII 1952, author's coll. 1 female: „16 VI 1950, Ligota Tworkowska, G. Śląsk, DROZDA“, author's coll. 31 males and females from the environs of Kraków: Kostrze, Grodkowice, Dulowa, 16 VI — 2 VII 1949—1950, author's coll. 26 males and females from Beskidy Mts.: Krynica 700 m, Jaworzyna ad Krynica 1100 m, Rytro 600 m, Radziejowa 1200 m (distr. Nowy Sącz), VI 1949—1953, author's coll. 7 males and females from Tatry Mts.: Zakopane 900 m, Hala Pyszna 1300 m, Kasprowy Wierch 1950 m, Kościelec 1800 m, 26 VI — 10 VII 1951—1953, author's coll.

USSR: Several males and females from Western Podolia, coll. TOLL.

GROUP 11

Group type: *Crambus pallidellus* DUP.

I place two European species here, viz. *Crambus pallidellus* DUP. and *C. mendizabali* AGENJO. I do not know the female of these species. In male genitalia pars basalis is well developed as short strongly sclerotized fold at the base of valva. Membrana valvae interna has a long pronged process. On fore wing the basal stripe is absent. Outer and inner band are only very slightly discernible.

***Crambus pallidellus* DUPONCHEL, 1836**

[Pl. XXIX, fig. 5, pl. LXVI, fig. 8]

Crambus pallidellus DUPONCHEL, 1836, Hist. Nat. Lép. France, 10: 63, pl. 270, fig. 6 (♀).

Crambus catalauniellus HERRICH-SCHÄFFER, 1853, Syst. Bearb. Schmett. Eur. 6: 144, Sppl. 163 (♀).

Platytes oxybialis MILLIÈRE, 1859—1864, Icon. Descript. Chén. Lép. 1: 135.

Platytes Oxybiellus MILLIÈRE, 1869—1874, Icon. Descript. Chén. Lép. 3: 284.

Crambus cuencalis HAMFSON, 1900, Trans. Ent. Soc. London: 371, p. 3, fig. 9 (♂).

Platytes Pallidellus STAUDINGER & REBEL, 1901, Catal. Lep. 2: 8.

Antennae light brownish. Palps at outer sides brownish, from above, below and at inner sides creamy-whitish. Frons convex, rounded, white. Head, patagia, thorax and tegulae white. Length of the fore wing 12,2 mm, width 4,1 mm. Costal margin delicately convex, apex sharply pointed, outer margin oblique, rather straight. Ground of the fore wing light brownish. Veins yellowish and whitish. Outer band below the costal margin white, at inner side bordered with brown. Outer band is sharply angled distinctly above the middle of the wing and below this break it is strongly oblique, very delicately marked orange-yellowish. Outer band, similarly coloured as the inner one, but rather less angled, below the break wavy near the outer margin. Above tornus three small silver dots at the outer

margin. Outer margin below the apex dark, marked blackish. Cilia on the outer margin light brownish below the apex, whitish at the base. This white coloration is bordered with dark line, which has metallic lustre below [pl. LXVI, fig. 8].

Male genitalia [pl. XXIX, fig. 5]: uncus well developed, rounded at the end. Gnathos narrower than uncus. Pars basalis developed as a strongly sclerotized fold, indistinctly separated from the valva. It is short, placed at the base of valva. Membrana valvae interna has a very long, strongly sclerotized, sharply pointed prong (second process). Valva at its end distinctly narrowed, pointed. Aedeagus without cornuti. Female unknown to me.

Comparing the type *C. cuencalis* HMPS. with DUPONCHEL'S illustration for *C. pallidellus* DUP., I ascertained that both forms most probably belong to one species. Thus *C. cuencalis* HMPS. would be synonymous for *C. pallidellus* DUP. The same results were obtained by the Spanish scientist AGENJO (1952).

C. pallidellus DUP. appears in Spain, Southern France, and probably in North Africa.

Examined material:

Spain: Type of *Crambus cuencalis* HMPS.: „Algezares Murcia 94. Korb“, „Typus“, „*Crambus cuencalis* HMPS. Cuenca“, „GU 802 a [praep. AMSEL]“, coll. Zoological Museum of the Humboldt University in Berlin.

France: 1 male: „Hérault, St. Guilhem — Désert, 29 VII 1952 [leg. LUCAS], author's coll. 1 male: „Montpellier (Hérault), 9 VIII 1953, [leg. LUCAS]“, author's coll.

***Crambus mendizabali* AGENJO, 1954**

Crambus mendizabali AGENJO, 1954, Faunula Lepidopterologica Alme-riense: 106, pl. 5, fig. 5, 6; pl. 13, fig. 5,

I know this species unfortunately only from the original description and the drawing of the male genitalia. According to this description *C. mendizabali* AGENJO shows a wing expanse 23—24 mm, while in *C. pallidellus* DUP., very similar to the former, the expanse is 24—30 mm. The colouring and design of the wings very similar to that of *C. pallidellus* DUP. In *C. mendizabali* AGENJO, according to this author, there

is on the fore wing a dark dot over the middle of the post-medial band, absent in *C. pallidellus* DUP. Greater differences between these two species appear in their genitalia. In *C. mendizabali* AGENJO uncus is twice shorter than in *C. pallidellus* DUP. and somewhat shorter than gnathos; in *C. pallidellus* DUP. uncus and gnathos are of the same length. Valva in *C. mendizabali* AGENJO is distinctly narrower than in *C. pallidellus* DUP. The process formed by membrana valvae interna is shorter in *C. mendizabali* AGENJO than in *C. pallidellus* DUP. Moreover, this process in *C. mendizabali* AGENJO is bent backwards hook-wise, while in *C. pallidellus* DUP. it has the form of a dagger directed straight upwards. The female of *C. mendizabali* AGENJO is not known.

The holotype and three paratypes come from Spain (Albufera de Adra, VI 1942, R. AGENJO leg.). These specimens are in the collection of Instituto Español de Entomología in Madrid.

Genus *Crambopsis* DE LATTIN, 1952

Typus generis *Crambus malacellus* DUPONCHEL, 1836

Crambus FABRICIUS, 1798, Supplementum Entomologiae Systematicae (partim).

Crambopsis DE LATTIN, 1952, Ent. Zeit. Stuttgart 62.

A genus recently established by DE LATTIN (1952) for the species *Crambus malacellus* DUP., on the basis of great differences between male genitalia of this species and the remaining species of the group *Crambus* F. s. l. Female genitalia were not discussed by DE LATTIN. He writes that in male genitalia of *Crambopsis malacellus* (DUP.) gnathos is absent. After thorough investigation of the last species I observed, however, the occurrence of gnathos, although not in the typical form but considerably reduced. In spite of this I agree with DE LATTIN that this species deserves to be separated as a distinct genus. An important feature distinguishing it from the species of the generic group *Crambus* F. s. l. is shown by the female genitalia. This is the lack of gonapophyses posteriores, which are always to be found in the generic group *Crambus* F. s. l. Labia are accreted

to lamella subgenitalis which is also a feature unusual in the *Crambidae*. They are rectangular while labia of species from other genera of the generic group *Crambus* F. s. l. are always triangular. On bursa copulatrix there are two signa similarly as in the genus *Crambus* F. s. str. Externally *Crambopsis malacellus* (DUP.) is similar to the species of the genus *Crambus* F. s. str. belonging to the first group distinguished by the shape and design of wings. The basal stripe and outer band occur. The apex of the fore wing pointed, outer margin distinctly bent.

Genus *Crambopsis* DE LATTIN is widely distributed; it occurs from western parts of Europe as far as New Zealand. I have no data concerning its occurring in North and South America. Thus far all forms occurring in Europe, Middle East, New Zealand and Australia, were considered as belonging to one species *Crambopsis malacellus* (DUP.). After the investigation of genitalia of specimens from Indo-Australia I showed (1956), however, that they belong to another species differing by its genitalia very much from *Crambopsis malacellus* (DUP.). Other places where *C. malacellus* (DUP.) was found in the East are in Syria (collection of. I. Z. P. A. S., Warszawa), Suchum and Batum (leg. and coll. author).

***Crambopsis malacellus* (DUPONCHEL, 1836)**

[Pl. XXXIV, fig. 4, pl. LXII, fig. 1, pl. LXVIII, fig. 6]

Crambus malacellus DUPONCHEL, 1836, Hist. Nat. Lép. France 10: 61, pl. 270, fig. 5.

Crambopsis malacellus DE LATTIN, 1952, Ent. Zeit. Stuttgart 62: 89, fig.

Antennae lustrous, dark, brownish-grey, in male slightly serrate, in female setaceous. Palps lustrous, from the outer side dark brownish-grey, from the inner side whitish. Frons slightly convex, rounded, smooth, greyish-whitish. Head white. Patagia lustrous, white in the middle, and dark brown-grey on sides. Thorax lustrous white. Tegulae coloured similarly as patagia on sides. Length of the fore wing varies from 7,5 to 9,5 mm, width ca 2,8 mm. Costal margin almost straight, before apex convex. Apex sharply pointed. Outer margin distinctly concave. Ground of the fore wing with distinct

lustre, brown to brown-black. Basal stripe snow-white. It runs near the costal margin, at the wing base almost connected with the margin. Basal stripe at its end interrupts outer band and touches triangular white spot which lies at apex. Below costal margin in the outer part of the wing four white oblique streaks. One of these streaks is the beginning of the outer band. Outer band sharply angled, above dorsal margin with a bend pointed toward outer margin. The place between outer band, outer margin and below the angle of the band, coloured grey. On this place three or four horizontal small black streaks. Ground above dorsal margin whitish. Cilia on the outer margin dark, lustrous, below the apex white at the end; in the middle of the wing width two or three times interrupted by white. Hind wings lustrous, white, sometimes a little darkened greyish at margins. Cilia of hind wings white.

Male genitalia [pl. XXXIV, fig. 4]: uncus very long, narrow, strongly bent pointed at the end. Gnathos nearly disappearing. Tegumen narrow. Saccus triangular, pointed. Valva rounded. Basal part of valva strongly sclerotized, in the shape of a plate detached ventrally from valva. Dorsal edge of the valva from the base to its middle list-like, strongly sclerotized. Aedeagus as long as the whole copulatory apparatus, distinctly widened at the beginning. Large single cornutus.

In the female [pl. LXII, fig. 1] gonapophyses anteriores and posteriores absent. Labia quadrangular. Ostium bursae pocket-like. Between ostium bursae and ductus bursae there is a strong narrowing. Ductus bursae straight, wide, longitudinally ribbed. Bursa transparent with two star-like signa.

Crambopsis malacellus (Dup.) is a Mediterranean element. It occurs in August and September.

Examined material:

France: 1 male: „Bass. Pyrénées St. Pierre d'Irube, VIII 1937, CH. FISCHER“, author's coll. 3 males: „Mougerre B[asses] P[yrénées], 29 VIII 1937, G. T. ADKIN“, author's coll. 9 males and females: „Courthézon près Orange Vaucluse, 12—20 IX 1950, coll. CH. FISCHER“, author's coll. 1 male: „1892, Cannes, Cot.“, coll. I. Z. P. A. S., Warszawa. 2 males: „1890 [and] 1892, Gallia occ. Gascogne, Cot.“, coll. I. Z. P. A. S., Warszawa.

Italy: 2 males and 2 females: „F. 25 VIII [and] 27 VIII 1895, Lombard. Brianza, TUR.“, coll. I. Z. P. A. S., Warszawa.

Genus *Mesocrambus* gen. nov.

Typus generis: *Crambus candiellus* HERRICH-SCHÄFFER, 1849

Crambus FABRICIUS, 1798, Supplementum Entomologiae Systematicae (partim).

Into this genus I place one Ponto-Mediterranean species viz. *M. candiellus* (H.-S.) which is characteristic by a very peculiar external appearance and genital structure. The shape of fore wings is very characteristic for it. Apex pointed, outer margin below apex strongly bent inwards but not incised as in many species of the genus *Crambus* F. s. str. Two transverse bands in the form of sharply marked narrow lines. The basal stripe always present. It reaches from the base of the wing to the outer margin. In the species of the genus *Crambus* F. s. str. the basal stripe reaches generally to the outer band and consists of the proper stripe and the spot prolonging it. In male genitalia uncus and gnathos are very wide, gnathos is shovel-like. Dorsal part of valva is better sclerotized than the ventral one, but pars basalis does not appear in its proper shape. In female ostium bursae is cup-shaped. The signum is absent. The geographical distribution of *M. candiellus* (H.-S.) is different than the distribution of the species of the genus *Crambus* F. s. str. in which Ponto-Mediterranean species do not occur: the species of the genus *Crambus* F. s. str. are distributed either in all Europe or rather in its Northern parts.

Mesocrambus candiellus (HERRICH-SCHÄFFER, 1849)

[Pl. XXIX, fig. 3, pl. LXII, fig. 2, pl. LXVIII, fig. 8]

Crambus candiellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmiett. Eur. 4: 181.

Antennae brown, in male as in the female very flatly serrate from below. Palps at sides brown from outside, from inside whitish, from below and from above white. Frons slightly convex, rounded, lustrous, whitish. Head and patagia whitish. Thorax and tegulae yellow-brownish. The length of the fore wing 11—13 mm, the width ca 4 mm. Costal margin visibly

convex. Apex sharply pointed. Outer margin below the apex strongly bent inwards. Ground of the fore wing with slight lustre, brown, the design white. There are two transverse bands. They are of the shape of narrow streaks, sharply marked. Inner band below costal margin strongly oblique toward the outer margin, above the middle of the wing sharply angled and almost parallel to the outer margin, above the dorsal margin with delicate convexity, and below this convexity strongly oblique toward the base of the wing. This band below costal margin and above dorsal margin is brown, in the middle it consists of yellow scales distinctly detached from surface of wing. The outer band of similar shape as the inner one, similarly coloured, but below costal margin bordered with white. This band in its upper part approaches considerably to outer margin and almost touches it in its upper break. Below the costal margin there is a white narrow stripe running from wing base to outer band, and interrupted only by inner band. Basal stripe a little wider than the costal stripe, delicately widening toward the outer margin, and touching it. Basal stripe interrupted by two bands. In the narrow brown area between costal and basal stripe in the outer part of wing a yellow narrow streak consisting of detached scales similarly as in middle parts of transverse bands. This streak begins before inner band and ends at the outer one. Place above dorsal margin white. Border between this place and brown ground is not sharp. In apical field there is an oblique silvery line parallel to outer band in this place. Outer margin below apex white and bordered with dark. Cilia on the outer margin white with ends darkened with yellow. Basal streak of scales below apex white at base, at ends brown, in middle of wing brown-golden, and above dorsum wholly white. Hind wings with slight lustre, light-brownish, lightened to white at the base. Cilia snow-white, on the costal margin darkened with greyish.

Male genitalia [pl. XXIX, fig. 3]: uncus wide, pointed. Gnathos pointed, shovel-like. Tegumen wide. Saccus rather elongated, oval. Valva wide, sharply pointed. Dorsal part of valva strongly sclerotized. Aedeagus visibly curved, narrow, shorter than the whole copulatory apparatus. Cornuti absent.

In female genitalia [pl. LXII, fig. 2] ostium bursae cup-

-like, strongly sclerotized, distinctly separated from the ductus bursae. Ductus bursae without loops, transparent. Bursa copulatrix transparent. Signum absent.

M. candiellus (H.-S.) is a Ponto-Mediterranean element, reported from Hungary, Southern and Eastern Europe. It occurs from June to September.

Examined material:

Greece: 1 female „2 IX“, „*candiellus* HS, Athen“, coll. Zoological Museum of the Humboldt University, Berlin.

Albania: 8 males and females leg. and coll. R. WOJTUSIAK, Kraków.

Hungary: 3 male: „Királyhalom, Dr. SCHMIDT, 20—31 VII 1933“, author's coll.

Genus *Metacrambus* gen. nov.

Typus generis: *Crambus carectellus* ZELLER, 1847

Crambus FABRICIUS, 1798, Supplementum Entomologiae Systematicae (partim).

Platytes GUENÉE, 1845, Europaeorum Microlepidopterorum Index methodicus (partim).

One species belongs to this genus, viz. *M. carectellus* (ZELL.) described by ZELLER as belonging to the genus *Crambus* F. and later considered as belonging to the genus *Platytes* GUEN. It cannot belong to the latter in any case because of the presence of the 4-th arm going out of the trunk of the vein *m*. This species, externally as well as in genitalia is a different from the other genera of the group *Crambus* F. s. l. distinguished by me. Externally it has some features common with *Mesocrambus candiellus* (H.-S.). Those features are: the shape of the fore wing and similar two bands of fore wings. In male genitalia are characteristic by the presence of strong bristles on uncus and dorsal edge of valva. The basal stripe of fore wing is absent. In female genitalia in bursa copulatrix there are numerous signa, of the shape of spines with their sharp ends pointed to the middle of bursa copulatrix and fastened by their bases to the walls of bursa. Except in this case I did not find such signa in any species of other genera of the generic group *Crambus* F. s. l.

***Metacrambus carectellus* (ZELLER, 1847)**

[Pl. XXIX, fig. 6, pl. LXII, fig. 6, pl. LXVIII, fig. 5]

Crambus carectellus ZELLER, 1847, Isis: 751.

Crambus lugdunellus MILLIÈRE, 1868, Icon. Descript. Chén. Lép. 2: 305, pl. 83, fig. 2.

Platytes Carectellus STAUDINGER & REBEL, 1901, Cat. Lep. Pal. 2: 8.

Antennae white, yellowish, slightly setaceous in both sexes, in male visibly wider at the end than in females. Palps white, with blackish darkenings at the end. Frons whitish, slightly convex, smooth, rounded. Head white. Thorax, tegulae and patagia pale yellow. The length of the fore wing 8,5—9 mm, the width 3—3,2 mm. The shape of the fore wing similar to that in *Mesocrambus candiellus* (H.-S.). Costal margin at the base of the wing visibly convex, in the middle delicately concave, in the outer part convex. Apex sharply pointed. Outer margin strongly bent inwards, similarly as in previous species. Fore wing dull with light brownish-creamy ground. Alongside the veins there run creamy streaks, which give the wing a very clear light-coloured appearance. These streaks reach the outer margin. Inner band of the shape of narrow brownish streak. Below the costal margin it is very distinctly bent outwards toward the outer margin, above dorsal margin it presents one sharply pointed tooth pointing toward the base of the wing. Outer band more indistinct than the inner one, distinctly visible only below the costal margin, where it is bordered by creamy at the outer side. This band presents a strong bend reaching almost to the outer margin and interrupted by the creamy streak. Outer margin below apex bordered dark. In this place basal streak of scales of the cilia white and bordered with dark. Above tornus two or three slightly visible dark dots. Cilia on the outer margin with very delicate lustre, light yellow-creamy. Hind wings with slight lustre, transparent white with white cilia.

Male genitalia [pl. XXIX, fig. 6]: uncus pointed with long strong bristles. Gnathos as long as uncus, pointed at the end. Tegumen very wide. Saccus oval. Pars basalis absent. Dorsal edge of valva provided with long strong bristles. Aedeagus short, strongly narrowed at its end. Several very small cornuti.

In female genitalia [pl. LXII, fig. 3] ostium bursae somewhat similar to that of previous species. Ductus bursae without loops, transparent. Bursa copulatrix transparent. Numerous small spine-like signa.

M. carectellus (ZELL.) is a Ponto-Mediterranean element. It occurs in July and August.

Examined material:

USSR: 2 males and one female „Sarepta“, author's coll.

Genus *Agriphila* HÜBNER, 1825

Typus generis: *Tinea deliella* HÜBNER, 1810—1813

Crambus FABRICIUS, 1798, Supplementum Entomologiae Systematicae (partim).

Chilo GERMAR & ZINCKEN, 1817, Magazin für Entomologie (partim).

Agriphila HÜBNER, 1825, Verzeichniss bekannter Schmettlinge (partim).

Exoria HÜBNER, 1825, Verzeichniss bekannter Schmettlinge (partim).

A very numerous and very slightly differentiated genus. Male genitalia are characterised by a very slight sclerotization. Pars basalis developed weakly as a usually short finger-like process, not much more sclerotized than the rest of the valva. Besides pars basalis, valva never shows other processes. The remaining parts of male genitalia are very similar in all species. The size and number of cornuti are of the greatest taxonomical value. Pars basalis and valva variable in shape; determining of species according to the shape of genitalia is very difficult and sometimes quite impossible. Variability of the number and shape of cornuti is much smaller and we often find in them distinct specific differences. Female genitalia with one signum on bursa copulatrix. They are like the male ones — generally very similar to each other but we find in them somewhat greater specific differences. Gonapophyses posteriores, and labia well developed. Gonapophyses anteriores generally weakly developed. The connection of lamella subgenitalis with ostium bursae is always very weak membranous. Ostium bursae in the shape of a small bowl or semicircular cup. It is always

distinguished from the rest of ductus bursae by the width and the degree of sclerotization. Ductus bursae reaches generally to the half of the length of the abdomen. The division into groups according to the genitalia is not so clear as the one based on the design and coloration of the wings. Here we may discern the groups with or without cornuti; further groups with weakly or strongly developed pars basalis. These groups are very distinctly divided into still smaller ones according to the design and coloration of the wings.

The design of the wings shows a much greater heterogeneity than their genitalia, although it is very weakly developed in comparison with the species of genus *Crambus* F. s. str. for example. We may discern here several types of wing design. The first of them is characteristic by unicoloured fore wings, with more darkly marked veins or traces of two transverse bands at the most. This type is relatively not numerous; such species belong to it as *Agriphila culmella* (L.), some forms of *A. tristella* (DEN. & SCHIFF.) and others. To the second type belong the species with rather distinct bands (outer and inner) on the fore wings. There appears here also a dark spot situated on the inner band approximately in the middle of the wing. Here may be included species belonging to different genital groups as *A. inquinatella* (DEN. & SCHIFF.) and *A. geniculea* (HAW.). The representatives of the third type have a distinct silvery basal stripe on the fore wings. These are such species as *A. selasella* (HBN.), *A. latistria* (HAW.), or *A. tristella* (DEN. & SCHIFF.). To the fourth type belongs *A. biarmica* (TNGSTR.). This species differs strongly in its external appearance from the rest of the species of the genus *Agriphila* HBN. The Alpine race has the fore wings unicoloured or with very weakly developed design. The Scandinavian form, however, has two distinct transverse bands on the fore wings. These bands in the contrary to other species of the genus *Agriphila* HBN. are not strongly oblique and run from costal margin to the dorsal margin without distinct indentations. A very characteristic feature appearing in many species of the genus *Agriphila* HBN. is a conical protuberance on the frons. Some of the species of the genus *Catoptria* HBN. have also strongly convex foreheads but this convexity is never so strongly

developed as in the representatives of the genus *Agriphila* HBN. According to this feature HEINEMANN (1865) separated the species „*Crambus*“ *deliellus* (HBN.) and recognized it as the generic type of the genus *Agriphila* HBN.

As I mentioned above the genus *Agriphila* HBN. is very slightly differentiated. The species belonging to it show very weak specialization. Because of often very slight and subtle specific differences, and at the same time a great variability of the design and external coloration as well as the structure of genitalia, there often occur very great difficulties in the determination of some species. Sometimes on the basis of available materials these problems are quite insolvable. In such cases it is hard to say whether we deal with distinct species or only with subspecies. The genitalia of almost all European species of *Agriphila* HBN. are delusively similar to each other. In some cases there appear distinct differences in the shape and number of cornuti. In many species, however, cornuti do not occur and male copulatory apparatuses in such cases are often not to be distinguished as for example in *Agriphila graphella* (CONST.) and *A. hungarica* (SCHMIDT) or *A. culmella* (L.) and *A. aeneociliella* (EVERS.). Female genitalia are also very variable and similar to each other in many species of *Agriphila* HBN. Sometimes females are extremely difficult to determine. As an example I will mention the forms with reduced design of such species as *A. inquinatella* (DEN. & SCHIFF) and *A. brioniella* (ZERNY). Their female genitalia are variable and very similar to each other. When we deal with specimens from Central Europe where *A. brioniella* (ZERNY) does not occur, e. g. from Poland, there are no difficulties in the determination of the materials. But if the materials are from South Europe the determination is then almost impossible.

The most difficult problems connected with the separation of species arise in the case of *A. latistria* (HAW.) and *A. monotae-niella* (H.-S.), or *A. osseella* (HMPS.) and a unicoloured light-yellow form of *A. tristella* (DEN. & SCHIFF.). In the first case I have temporarily treated these two forms as one species differentiated into geographical races (subspecies). In spite of thorough investigation of a relatively large material I found no stable specific features in the above mentioned two forms,

except that the specimens from South Europe show generally a weaker structure and smaller expanse of the wings. All specific features credited to them by various authors proved to be very variable and occurring in both forms. This problem could be solved definitely by biological studies, because their genitalia are identical. In the case of *A. osseella* (Hmps.) we see that this species differs distinctly from *A. tristella* (Den. & Schiff.) but a description of the features by which it differs from the unicoloured light-yellow form of this species is a very difficult. Besides *A. osseella* (Hmps.) shows a great variability in coloration and design so that we do not know at all whether we deal with one species or several ones.

The species of the genus *Agriphila* Hbn. present, except the above mentioned four groups which are very schematical, small groups including generally two or three species very difficult to distinguish.

In accordance with these data a hypothesis could be stated that the genus *Agriphila* Hbn. is a young group with a great evolutionary capacity, developing numerous forms under the influence of various factors occurring in various regions. This is shown also by the fact that, with small exceptions, species of the genus *Agriphila* Hbn. are relatively narrowly distributed. The genus *Agriphila* Hbn. is distributed in the whole Palearctic and is a dominant group in the generic group *Crambus* F. s. l. beside the genera *Catoptria* Hbn. and *Pediasia* Hbn. In North America it is much less represented, and I do not know at all whether it occurs in the tropics or not, as I very rarely examine the genitalia of tropical *Crambidae*.

As far as the distribution in various altitudes of *Agriphila* Hbn. is concerned, I stated, on the basis of available data, that this is a group of lowland forms confined, with small exceptions, to xerothermic environment. In Poland I have not met any species of this genus above 1000—1200 m. In the Alps only some species occur in higher altitudes. These are either the widely distributed species as *A. tristella* (Den. & Schiff.), or the species not exclusively connected with xerothermic environment such as *A. culmella* (L.) or boreo-alpine forms e. g. *A. biarmica* (Tngstr.).

The species of *Agriphila* Hbn. appear relatively the latest

in the season in the whole generic group *Crambus* F. s. str. They begin to fly in Europe as late as the middle of July. According to the data given by KRULIKOVSKIJ (1919) the species *A. aeneociliella* (EVERS.) appears in the province of Viatka sometimes already at the end of June [?!]. These are, however, single cases. There are almost no data concerning the phenology of species of *Agriphila* HBN. in Central and East Asia. In the papers of LEECH (1901) or CARADJA (1910) are mentioned only *A. geniculea* (HAW.) from China and *A. inquinatella* (DEÑ. & SCHIFF.) from Mongolia however without phenological data. Besides TOLL has in his collection some specimens of *A. aeneociliella* (EVERS.) from Manchuria collected in July. This would suggest that the species of the genus in question are concentrated mainly in Europe and North Africa, from where I know the materials and numerous data in the literature.

The biology of species of the genus *Agriphila* HBN., similarly as the biology of other *Crambidae*, is little known. All known caterpillars feed on grasses. They are mostly polyphagous as I ascertained by breeding several species of *Agriphila* HBN. The populations of *Agriphila* HBN. are usually very numerous.

I divide the species belonging to the genus *Agriphila* HBN. into two sections. In the first of them I include the species in which pars basalis in the male genitalia is developed as a short projection or finger-like process. To the second belong the species with better developed pars basalis; it has the shape of a finger-like process reaching almost to the end of the valva. These sections are not equal in numbers for to the first belong the majority of the species of *Agriphila* HBN. and to the second one only three species.

As I mentioned earlier the genus *Agriphila* HBN. is very weakly differentiated, therefore the criterions according to which I divide it into groups are different from those ruling the other genera, of the generic group *Crambus* F. Because of the very slight differentiation of the genitalia of *Agriphila* HBN. the division into groups is not easy in this case and it is necessary to take under consideration to a great extent the design and coloration of wings. Some subtle similarities of genitalia, however, may be observed.

Section A

Short pars basalis in male genitalia.

GROUP 1

Group type: *Agriphila deliella* (HBN.)

On the fore wing occurs light-coloured basal stripe. In aedeagus cornuti absent. Female ostium bursae narrow.

Agriphila deliella (HÜBNER 1810—1813)

[Pl. XXX, fig. 1, pl. LI, fig. 1, pl. LXIX, fig. 1, 2]

Tinea deliella HÜBNER, 1810—1813, Samml. Eur. Schmett.: pl. 60, fig. 402 (♂), 403 (♀).

Chilo Deliellus GERMAR & ZINCKEN, 1817, Magazin Ent. 2: 96.

Agriphila Delialis HÜBNER, 1825, Verz. Bek. Schmett.: 365.

Crambus nigristriellus STEPHENS, 1834, Illustr. Brit. Entomol., *Haustel-lata* 4: 330.

Crambus deliellus DUPONCHEL, 1836, Hist. Nat. Lép. France, 10: 109, pl. 275, fig. 8.

Antennae from below brown, from above white to creamy-white, almost always ringed brown; rarely wholly uniformly brown. Male antennae at one side pectinate, female ones setaceous. Palps at sides from outer side yellowish, spotted brown, from the inner side whitish. Frons yellowish-white with a very strong, sharp, conical protuberance. Head, patagia, tegulae and thorax similarly coloured as ground of the fore wing, generally yellow, sometimes darkened brown. Length of fore wing varies from 10,5 to 14,5 mm, the width 3,2—4,2 mm. Fore wing very slender. Costal margin of the male delicately concave in the middle, that of the female almost straight. Apex of the male rounded, that of the female slightly pointed. Outer margin of male slightly oblique, of the female strongly oblique and more or less straight. Ground of fore wing dull light straw-yellow, sometimes darkened by a dark suffusion. A narrow basal stripe, reaching to 3/4 of the wing length. It is narrowed at the end and fuses with the wing ground. It is silvery-white

but sometimes yellow and then almost does not contrast with ground of the wing. This stripe is enclosed from below and above by two black unsymmetrical streaks. The lower of these lies in basal part of wing. The inner one encloses the stripe at its end; it is better visible and longer than the lower one. In the place of median cell the upper streak generally slightly thickened. Above dorsal margin there is a brownish suffusion. On the outer margin several indistinct, dark dots. Cilia on the outer margin slightly lustrous, uniformly whitish, yellowish or creamy-greyish. Hind wings pearly-white, slightly darkened at the margins. Cilia white.

Male genitalia [pl. XXX, fig. 1]: uncus pointed, gnathos club-like at the end. Pars basalis weakly developed, pointed, a little more sclerotized than the rest of valva. Aedeagus relatively wider than in other species of *Agriphila* HBN. At its end it has a characteristic ventral little thorn. Cornuti absent.

In the female genitalia [pl. LI, fig. 1] gonapophyses anteriores have the shape of wide, triangular appendages. The connection of lamella subgenitalis with ostium bursae weak, formed by delicate membrane. Ostium bursae cup-like, relatively narrow (diameter 0,4 mm, while in many species of *Agriphila* HBN. it reaches 0,6 mm). Ductus bursae 1,4 mm long, strongly sclerotized behind ostium bursae, with ribbed surface. Ductus bursae near bursa copulatrix strongly widened, transparent. On bursa copulatrix one star-like signum.

This species is widely distributed in Europe except Scandinavia. Besides it is known from Western Asia. It is an element characteristic for sandy regions. It occurs in August and middle of September. Caterpillar feeds on grasses.

Examined material:

Germany: 1 male from Bremen, author's coll. 8 spec. from Potsdam, coll. I. Z. P. A. S., Warszawa. 3 spec. from Jena, coll. I. Z. P. A. S., Warszawa.

Hungary: 1 male: „Kishunhalas, 17 IX 1939, SZENT-IVÁNY“, author's coll. 2 males: „Budapest, SCHMIDT, Rakos, 17 IX 1911“, author's coll. 1 female „18 IX 1929, Csepel“, author's coll.

Poland: 6 males and females from Wólka Kozłowska, distr. Radzymin, VIII 1950, author's coll. 12 males and females from Puszcza Kampinowska (near Warszawa), Wydma Łuże, 23 VIII 1949, author's coll. 14 spec. from Poznań, coll. I. Z. P. A. S., Warszawa. 2 spec. from Opole, coll.

I. Z. P. A. S., Warszawa. 5 males and females from Katowice-Ligota, 29 VIII 1953, author's coll. 25 males and females from Podgórk, distr. Kraków, 19—30 VIII 1946—1950, author's coll.

GROUP 2

Group type: *Agriphila selasella* (HBN.)

A light-coloured basal stripe on the fore wing sometimes absent. In male genitalia cornuti absent. In female genitalia ostium bursae wide.

Agriphila selasella (HÜBNER 1810—1813)

[Pl. XXX, fig. 2, pl. LI, fig. 10, pl. LXIX, fig. 3—5]

Tinea selasella HÜBNER, 1810—1813, Samml. Eur. Schmett.: pl. 60, fig. 405 (♂), 406 (♀).

Chilo Selasellus GERMAR & ZINCKEN, 1817, Magazin Ent. 2: 92.

Agriphila Selasalis HÜBNER, 1825, Verz. Bek. Schmett.: 365.

Crambus selasellus DUPONCHEL, 1836, Hist. Nat. Lép. France, 10: 104, pl. 272, fig. 3.

Antennae brownish, slightly yellowish ringed, in the male weakly serrated from below, in the female setaceous. Palps at sides yellowish, brown spotted, from the inner side paler. Head white or yellowish-creamy. Frons strongly convex, but not conical as in *A. tristella* (DEN. & SCHIFF.) and related species. It is the best feature by which *A. selasella* (HBN.) differs from some similar forms of *A. tristella* (DEN. & SCHIFF.) which have frons with sharp conical protuberance. Patagia creamy-yellow, often whitish in the middle. Thorax white or yellowish-creamy. Tegulae of similar colour as ground of the fore wings, sometimes lighter. Length of fore wing varies from 10 to 12,5 mm, width 3,5—4,2 mm. Its ground is dull, dirty yellow, sometimes darkened brownish. Basal stripe white silvery, reaches to 2/3 of wing length; at its end distinctly limited and not narrowed. In *A. tristella* (DEN. & SCHIFF.) this stripe at its end fuses with the ground of the wing and is visibly narrowed. Cilia on outer margin dull, uniformly yellowish

or greyish-brownish. Basal stripe often bordered from above and below by dark streaks. On outer margin there are several indistinct dark dots. Hind wings greyish-brownish. Cilia generally creamy, treak of basal scales often darker. Outer margin of hind wing generally more darkly marked. Sexual dimorphism is evident in the shape of the fore wings. Apex in the female is more pointed and outer margin more oblique than in male.

Male genitalia [pl. XXX, fig. 2] strongly similar to there of *A. culmella* (L.). Aedeagus somewhat wider than that of *A. culmella* (L.). No cornuti.

In female genitalia [pl. LI, fig. 10] gonapophyses anteriores developed, narrow. Ostium bursae cup-like, wide. Ductus bursae straight, transparent. One signum on bursa copulatrix.

A. selasella (HBN.) is an Euro-Siberian element, widely distributed in Europe. It appears in wet regions in July and August.

Examined material:

Germany: 24 males and females from Bavaria, Kochel, leg. OSTHELDER, author's coll.

Poland: 45 males and females from Dulowa, distr. Trzebinia, 5 VIII 1952, author's coll. 32 males and females from environs of Kraków: Podgórk, Kobierzyn, VIII 1950—1952, leg. and coll. author. 3 males from Wólka Kozłowska, distr. Radzymin, VIII 1951, author's coll. 4 males from Puszcza Kampinoska (near Warszawa), Wydma Łuże, 22 VIII 1949, leg. and coll. author.

***Agriphila aeneociliella* (EVERSMANN, 1844)**

[Pl. XXX, fig. 3, pl. LI, fig. 4, pl. LXIX, fig. 6—8]

Chilo aeneociliellus EVERSMANN, 1844, Fauna Lep. Volgo-Uralensis: 546.

Crambus aeneociliellus ZELLER, 1863, Chil. Cramb. Gen. Spec.: 46.

Crambus Quadrifidellus LEDERER, 1883, Verh. Zool.-bot. Ver. 3: 284, pl. 7, fig. 3.

Crambus tristellus SCHIFF. ab. *brivitellus* [sic!] KLEMENSIEWICZ, 1898, Spr. Kom. Fizjogr. PAU 33: 157.

Crambus aeneociliellus bivitellus TOLL. 1942, Zeit. Wien. Ent. Ver. 27: 166, pl. 13, fig. 2.

Antennae dark, grey-brown, in male distinctly, in female very flatly serrate, rather setaceous. Palps on outer side brown,

spotted white, from inner side most often white. Head white to creamy. Frons with a distinct conical protuberance. Patagia light-coloured in the middle, yellow to brownish at sides. Thorax whitish. Tegulae yellow to brownish. Length of the fore wing varies from 10 mm to 12 mm, width 3,3—4,2 mm. Sexual dimorphism evident in the shape of the fore wings. Fore wing of female with more pointed apex and more oblique outer margin than that of male. Colour of the fore wings variable. Specimens with ground of fore wings ochre-yellow to greyish-yellowish are most frequent. There occur, however, specimens with ground of the fore wings pale yellow and such with brown ground. These are extreme cases. Below costal margin there runs from base of the wing to its middle a silvery distinct stripe. It is a characteristic feature by which *A. aeneociliella* (EVERS.) differs from the species similar to it, such as *A. tristella* (DEN. & SCHIFF.) and *A. selasella* (HBN.). Beside this stripe on the fore wing there appears a basal stripe always silvery-white. This stripe is not narrowed at the end as in *A. tristella* (DEN. & SCHIFF.) torn, distinctly distant from the outer margin. [KRULIKOVSKIJ (1909) writes that in 8 out of 11 investigated specimens from Vjatka district the basal stripe touches the outer margin]. Basal stripe bordered from above and below by dark streaks, which are generally well visible. On the outer margin several, generally rather distinct dark dots. Cilia on the outer margin with metallic golden lustre, uniformly brownish. Hind wings grey-brownish, with slight lustre. Cilia of hind wings lustrous, darkened on apex, greyish-creamy, sometimes with a darker streak of basal scales. Outer margin marked sometimes more darkly than the ground of the wing. As I mentioned *A. aeneociliella* (EVERS.) approaches *A. selasella* (HBN.) and *A. tristella* (DEN. & SCHIFF.) in the coloration of the wings. In genitalia, however, *A. culmella* (L.) is closest to it. *A. tristella* (DEN. & SCHIFF.) belongs to another genital group.

Male genitalia [pl. XXX, fig. 3]: pars basalis relatively narrow by which it differs from *A. culmella* (L.), pars basalis of which is distinctly wider. On valva beside pars basalis there are no other processes. Uncus pointed, gnathos ended club-like similarly as in related species. -Aedeagus somewhat longer

and wider than that of *A. culmella* (L.). It is provided with a typical ventral small thorn at the end.

Female genitalia [pl. LI, fig. 4] can be compared also with that of *A. culmella* (L.). Gonapophyses anteriores completely disappearing. Ostium bursae cup-like, deeper than that of *A. culmella* (L.). Ductus bursae a little shorter than in *A. culmella* (L.), weakly sclerotized. One star-like signum on bursa copulatrix.

The form described above was published by KLEMENSIEWICZ (1898) as *Crambus tristellus* SCHIFF. ab. *brivitellus* [sic!] KLEM., then it was recognized as *Crambus aeneociliellus* EVERS. subsp. *bivitellus* KLEM. The specimens collected at Brody (North-Western Podolia) by KLEMENSIEWICZ were compared by TOLL (1942) with the specimens of *A. aeneociliella* (EVERS.) from Manchuria. The specimens from Manchuria were considered as typical. Their basal stripe on fore wing is less contrasting with the ground of the wings. In the male genitalia of these two subspecies no stable differences were found. Unfortunately there are no females among Manchurian materials. I think that the form occurring in Poland is rather a typical one while the Manchurian form is only a subspecies of *A. aeneociliella* (EVERS.). It is probable that the form from around Volga is identical with the one from Central Poland and not with the Manchurian form. The same species was described by LEDERER (1853) as *Crambus quadrifidellus* LED. from Siberia without any closer data about the place of occurring. LEDERER's description is in complete accordance with the habitus of our specimens. •

A. aeneociliella (EVERS.) is a Siberian element reaching its Western border of distribution in Poland in the environs of Warszawa. From outside of Poland reported also from Brody, Psków and Vjatka distr. In Poland found by ADAMCZEWSKI in the environs of Tłuszcz; by the author in 1951 in the Kampinos Forest (Puszcza Kampinowska) near Warszawa and by KOSTROWICKI (in litt.) in the environs of Ostróda (North Poland). *A. aeneociliella* (EVERS.) flies here in the second half of August. The limits of appearance fluctuate very slightly under the influence of atmospheric conditions. In Eastern Europe (district

Vjatka) *A. aeneociliella* (EVERS.) occurs already in the end of June or beginning of July and flies until September according to KRULIKOWSKIJ (1919). It is interesting that this author gives dry deciduous forests as the place of occurrence of *A. aeneociliella* (EVERS.).

An attempt of rearing *A. aeneociliella* (EVERS.) did not produce important results. Females laid eggs immediately after being caught, similarly as other species of *Crambidae*. The eggs were creamy, and after several days changed into brown-orange. Caterpillars hatched after 9—10 days. They were light orange with black heads. They fed on several species of grass, most eagerly on *Bromus inermis* LEYSS. Immediately after hatching the caterpillars begin to spin corridors from the rests of grass and excrements. These corridors were covered from inside by a white felt-like substance. I reared them first in closed tubes changing food daily. After several days I placed them in Petri-glasses filled with sand. The caterpillars immediately constructed corridors in sand from which they did not come out. They fed after pulling the blades of grass into the corridor. When frost came the caterpillars stopped feeding. The mortality of caterpillars was very high (the highest in initial stadiums). As an example I may give the fact that during one rearing from 247 hatched caterpillars only 14 were left to hibernate. During hibernation in a cool place all caterpillars died. The last ones were alive until the middle of February. In the next year I tried to rear them in a different manner. I placed hatched caterpillars on grass which was growing in a box, despite of this all caterpillars died after a short time. Unfortunately since then I had no time for further research on rearing this interesting species.

Examined material:

Poland: 152 males and females from Wólka Kozłowska ad Thuszcz, distr. Radzymin, 17—24 VIII 1949—1952, author's coll. 14 males spec. from Puszcza Kampinoska near Warszawa, Wydma Łuże, 19—22 VIII 1950—1952, author's coll. Several males and females from Moruski, distr. Ostróda (Northern Poland), VIII 1949, leg. KOSTROWICKI, coll. I. Z. P. A. S., Warszawa.

USSR: 5 males spec. from Brody (North-Western Podolia), leg. KLEMENSIEWICZ, coll. I. Z. P. A. S., Kraków.

***Agriphila culmella* (LINNAEUS, 1758)**

[Pl. XXX, fig. 4, pl. LI, fig. 3, pl. LXX, fig. 1—3]

Phalaena Tinea culmella LINNAEUS, 1758, *Systema Naturae* Ed. 10:824.*Phalaena Culmella* SCOPOLI, 1763, *Entomologia Carniolia*: 246.*Tinea straminella* DENIS & SCHIFFERMÜLLER, 1775, *Syst. Verz. Schmett.* Wien. Geg.: 134.*Tinea culmella* FABRICIUS, 1794, *Entomologia Systematica* 3/2: 295.*Crambus culmorum* FABRICIUS, 1798, *Suppl. Entomol. Syst.*: 471.? *Tinea vinacella* SCHRANK, 1802, *Fauna Boica* 2/2: 105.*Palparia striga* HAWORTH, 1811, *Lepidoptera Britannica* 3: 490.*Chilo culmellus* GERMAR & ZINCKEN, *Magazin Entomol.* 2: 70.*Exoria culmalis* HÜBNER, *Verz. Bek. Schmett.*: 376.*Crambus culmellus* DUPONCHEL, *Hist. Nat. Lép. France* 10: 71, pl. 2, a, b.? *Crambus marginellus* STEPHENS, 1834, *Illustr. Brit. Entomol. Haustellata* 4: 323.

Antennae brown from below, creamy from above, with slight dark ringing; in male distinctly serrate, in female setaceous. Palps on the outer side brown, with light-coloured spots, on the inner side whitish. Frons yellowish, with strong conical protuberance. Head yellowish to brownish. Patagia, thorax and tegulae yellowish, sometimes darkened with brown at sides. Length of fore wing varies from 7,8 mm to 10,8 mm, width from 2,5 mm to 3,2 mm. Costal margin almost straight in male, slightly convex in female. Apex slightly rounded in male, more pointed in female. Outer margin rather straight in male, oblique in female. Ground of the fore wing light-yellow, dull, more or less darkened by a brown suffusion alongside the veins. In the ab. *obscura* (HEIN.) ground of fore wings very strongly darkened, sometimes quite brown. There are no traces of transverse bands. At termen several dark dots. Cilia on the outer margin uniformly coloured, with metallic strong lustre, golden. Hind wings grey-brownish. Cilia of hind wings generally creamy, sometimes darkened brown, streak of basal scales often visibly darker than rest of cilia.

ab. *serenella* (SCHAWERDA, 1921), *Dtsch. Ent. Zeit.* Iris 35: 128.

One male with light gold-yellow fore wing, without brown intervenal lines, with slightly visible brown dots at the outer margin and much lighter hind wings. From Kroatia.

Male genitalia [pl. XXX, fig. 4]: uncus pointed. Gnathos with a club-like widening near its end. Valva of a similar shape as that of *A. aeneociliella* (EVERS.). Pars basalis somewhat more sclerotized than the rest of the valva, wider than that of *A. aeneociliella* (EVERS.). Aedeagus with a typical small thorn near the end on the ventral side. Cornuti absent.

Female genitalia [pl. LI, fig. 3] like male ones, similar to those of *A. aeneociliella* (EVERS.). Gonapophyses anteriores almost reduced. Gonapophyses posteriores shorter than those of *A. aeneociliella* (EVERS.). Ostium bursae in the shape of a deep cup, but shallower than that of *A. aeneociliella* (EVERS.) while the opening of it is distinctly wider than in that species. Ductus bursae relatively short, more sclerotized than in *A. aeneociliella* (EVERS.). One star-like signum on bursa copulatrix.

A. culmella (L.) is an Euro-Siberian element, distributed in almost all parts of Europe. It appears in dry as well as in wet regions from July to September. Caterpillar feeds on various grasses.

Examined material:

France: 2 males: „Rainkopf Crête Vosges Ht.-Rhin 19 VII — 21 VIII 1949, 1300 m, CH. FISCHER“, author's coll. 2 males: „Schiesrothried pr. Metzeral Ht.-Rhin alt. 950 m, 22 VII [and] 22 VIII 1949, coll. CH. FISCHER“, author's coll. 3 males: „Ascou le Pujal Axles Thermes Ariège 6—12 VII 1950, 1400 m, coll. CH. FISCHER“, author's coll.

Great Britain: 2 males and 1 female: „Port Appin Argyll 8 VII 1951 E. C. P.-C. 5831, 5832, 5833“, author's coll.

Germany: 6 males: „Süd-Pfalz Geilweilerhof 6—9 VIII 1950, leg. DE LATTIN“, author's coll.

Italy: 2 males „Calabria Rotte Donato, 2 VIII 1921, A. FIORI“, author's coll. 1 male: „Piemonte Biella Alta Val Cervo, VII 1938, A. FIORI“, author's coll. 1 male: „Trentino Pinzolo, 26 VII 1927, A. FIORI“, author's coll. 2 males spec: „Mezzolombardei leg. DANNEHL“, coll. TOLL. 1 male: „Apennin. Merid. Mte Rotello, 1500—2000 m, 3 VII, coll F. DANNEHL“, coll. TOLL.

Poland: 1 male from Ligota Tworkowska, distr. Rybnik 27 VII 1950, author's coll. 11 males from Podgórk, distr. Kraków 17 VII — 13 VIII 1946—1951, author's coll. 9 males from Mszana Dolna, distr. Limanowa,

600 m, VIII 1949, author's coll. 61 males and females from Tatry Mts., Zakopane 900 m, 13—22 VII 1948, author's coll. 18 males and females from environs of Poznań: Dębina, Główniec, Sapowice, 9 VII — 1 VIII, leg. A. SZMYT, author's coll. 2 males from Łańsk—Rybaki, distr. Olsztyn, 19 VII 1952, author's coll.

GROUP 3

Group type: *Agriphila tristella* (DEN. & SCHIFF.)

On the fore wing basal stripe is present or absent. Transverse bands generally occur. The ground of the fore wing generally light yellow. In male genitalia always several cornuti.

Agriphila tristella (DENIS & SCHIFFERMÜLLER, 1775)

[Pl. XXX, fig. 5, pl. LII, fig. 1—2, pl. LXX, fig. 8, pl. LXXI, fig. 1—8]

Tinea tristella DENIS & SCHIFFERMÜLLER, 1775, Syst. Verz. Schmett. Wien. Geg.: 134.

Tinea culmella HÜBNER, 1796, Samml. Eur. Schmett.: 25, pl. 8, fig. 50 ♂.

Tinea paleella HÜBNER, 1796, Samml. Eur. Schmett.: 24, pl. 8, fig. 51.

Tinea aquilella HÜBNER, 1796, Samml. Eur. Schmett.: 24, pl. 8, fig. 52.

Crambus moerens FABRICIUS, 1798, Suppl. Entomol. Syst.: 473.

Tinea Ferruginella THUNBERG, 1788, Dissert. Entomol.: 96.

Crambus culmorum FABRICIUS, 1798, Suppl. Entomol. Syst.: 471.

? *Tinea fuscineella* SCHRANK, 1802, Fauna Boica 2: 100.

? *Palparia culmea* HAWORTH, 1811, *Lepidoptera Britannica* 3: 485.

Palparia petrifera HAWORTH, 1811, (nec HÜBNER), *Lepidoptera Britannica* 3: 485.

Palparia palea HAWORTH, 1811, *Lepidoptera Britannica* 3: 485.

Palparia tristis HAWORTH, 1811, *Lepidoptera Britannica* 3: 486.

Chilo Aquilellus GERMAR & ZINCKEN, 1817, Magazin Entomol. 2: 88.

Agriphila Eroetalis HÜBNER, 1825, (nec DENIS & SCHIFFERMÜLLER), Verz. Bek. Schmett.: 365.

Agriphila Aquilalis HÜBNER, 1825, Verz. Bek. Schmett.: 365.

Crambus tristis STEPHENS, 1834, Illustr. Brit. Entomol. *Haustellata* 4: 327.

Crambus fuscineellus STEPHENS, 1834, Illustr. Brit. Entomol. *Haustellata* 4: 329.

Crambus culmorum STEPHENS, 1834, Illustr. Brit. Entomol. *Haustellata* 4: 329.

Crambus paleellus STEPHENS, 1834, Illustr. Brit. Entomol. *Haustellata* 4: 329.

Crambus aquilellus STEPHENS, 1834, Illustr. Brit. Entomol. *Haustellata* 4: 329.

Crambus petrificellus STEPHENS, 1834, (nec HÜBNER), Illustr. Brit. Entomol. *Haustellata* 4: 328.

Crambus Tristellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 66.

Antennae sharply ringed light and dark, sometimes in dark coloured specimens antennae wholly darkened. In males antennae serrate from below, in females setaceous. Palps brown, at the outer side very finely spotted yellow, at the inner side yellowish or white-greyish. Frons yellow to brown, with strong conical protuberance. Head, patagia, thorax and tegulae yellow to brown. Fore wing slender; its length varies from 8 to 13 mm, width from 3 to 3,8 mm. Costal margin in males visibly, in females very distinctly convex. Apex in males slightly rounded, in females rather pointed. Outer margin in females more oblique than in males. Ground of fore wing pale yellow, grey, yellow-brownish, brown or blackish-brown. The yellow-coloured specimens often tinged with brown scales. Many authors give as the typical form of *A. tristella* (DEN. & SCHIFF.) the form with yellow ground of fore wing and silvery basal stripe. But judging from the original description of DENIS & SCHIFFERMÜLLER (1775) who write: „Grau und braungemischter Sch.“, the form with brown or grey-brown ground and without silvery basal stripe of the fore wing should be considered as typical. As the extremal forms of development of the design and colour of the fore wings of *A. tristella* (DEN. & SCHIFF.) four forms may be considered; the first with unicoloured dark fore wings without basal stripe; the second also with unicoloured wings but light-yellow; the third is the form with silvery basal stripe and with yellow ground of fore wing; and fourth with basal stripe and dark brown or blackish-brown ground. We may observe also all intermediate forms between these four forms. Basal stripe sometimes creamy or yellow; it is often only very indistinctly visible. Sometimes in yellow forms without basal stripe there is a longitudinal black slightly fused streak with indistinct margins. All above mentioned forms were described under separate names: the form without basal

stripe and with dark ground was named by HÜBNER (1796) as *Tinea aquilella*. The same form with yellow ground is known as *paleela* HBN. The form with silvery stripe and the yellow ground was described by HÜBNER as *Tinea culmella* and later KRULIKOVSKIJ (1909) gave for it the name ab. *hübnerella*, for *culmella* was nomen praeoccupatum. The last dark form with the silvery basal stripe was described by STEPHENS (1834) as *Crambus fuscinelinus*. STEPHENS probably took in account the *Tinea fuscinea* of SCHRANK, and he made a mistake in the name, but according to some authors *Crambus fuscinelinus* STEPH. is not *Tinea fuscinea* SCHRANK. The synonymy of all these forms is a very difficult problem. I have treated separately only the forms described recently.

On the fore wings there appear often the traces of two transverse bands. Such traces appear in the pale as well as in dark coloured forms. These traces are visibly only in the lower part of the wing and in the upper one they are regularly strongly reduced. In outer part of the wing sometimes more or less visible lighter spaces running alongside veins are detached from the end of basal stripe. Costal margin in the middle generally lighter, bordered from ground of wing. This is well visible in the dark forms. Basal stripe, if present, strongly narrowed at the end, and fused with the ground of the wing. Dark dots at the outer margin very slightly visible. Cilia on outer margin yellow-greyish to brown, with very slight lustre unicoloured. Hind wings with slight lustre, light greyish to brownish grey. The darkening of the fore wing has no influence on the darkening of the hind wings.

subsp. *pseudotristella* (ZERNY, 1943). [pl. LII fig. 1, pl. LXXI, fig. 7—8]

Crambus pseudotristellus ZERNY, 1943, Zeit, Wien. Ent. Ges. 38: 138, pl. 9, fig. 2, 3.

ZERNY described this form as a distinct species. It is difficult to solve the question of systematic rank of this form because genitalia of *A. tristella* (DEN. & SCHIFF.) and *A. pseudotristella* (ZERNY) are very similar. Externally *A. tristella* (DEN. & SCHIFF.) subsp. *pseudotristella* (ZERNY) approaches very much

to the dark form ab. *fuscelinella* (STEPH.). The female of *A. tristella* (DEN. & SCHIFF.) subsp. *pseudotristella* (ZERŃY) with larger bursa copulatrix than in *A. tristella* (DEN. & SCHIFF.) but this feature may be variable. I have no materials of typical *A. tristella* (DEN. & SCHIFF.) from South Italy for comparison. For the time being I consider *pseudotristella* (ZERŃY) as only a subspecies of *A. tristella* (DEN. & SCHIFF.).

subsp. *ribbeella* (CARADJA, 1910)

Crambus tristellus F. var. *ribbeellus* CARADJA, 1910, Dtsch. ent. Zeit.
Iris 24: 110, fig.

Four specimens from Granada with unicoloured light brown fore wings. It is interesting that CARADJA's photograph showing this form resembles rather *Pediasia contaminella* (HBN.) not *A. tristella* (DEN. & SCHIFF.). May be an error was made here?

ab. *obscoenella* (KRULIKOVSKIJ, 1909).

Crambus tristellus F. ab. *obscoenellus* KRULIKOVSKIJ, 1909, Mater.
faun. flor. Ross. 9: 182.

Specimens with unicoloured dark brown fore wings, from district Vjatka (USSR).

The forms ab. *paleella* (HBN.), ab. *fuscelinella* (STEPH.) and ab. *hübnerella* (KRUL.) were mentioned above.

Some specimens of *A. tristella* (DEN. & SCHIFF.) are extremely similar to *A. osseella* (HMPS.) Light yellow forms of *A. tristella* (DEN. & SCHIFF.) with unicoloured fore wings almost cannot be distinguished from *A. osseella* (HMPS.). *A. osseella* (HMPS.) generally has no dark ringed antennae or this feature is very weakly developed, while it is always distinct in *A. tristella* (DEN. & SCHIFF.). In male genitalia of these species no differences were found. I did not examine females of *A. osseella* (HMPS.). The yellow form of *A. tristella* (DEN. & SCHIFF.) with silvery stripe on the fore wing is somewhat similar to *A. selasella* (HBN.) but can be easily distinguished from it. *A. selasella* (HBN.) has a very weak protuberance on frons while the protuberance of *A. tristella* (DEN. & SCHIFF.) has the shape of a sharply ended cone. Besides in *A. selasella* (HBN.) the basal stripe of the fore wing is not merged with the ground of the wing at the end; it is

distinctly marked there and almost not narrowing while in *A. tristella* (DEN. & SCHIFF.) this stripe merges with the ground of the wing at the end and is very distinctly narrowed.

Male genitalia [pl. XXX, fig. 5] delusively similar to those of *A. osseella* (HMPS.), beside of similar structure as those of related species. In aedeagus 40—60 small cornuti.

Female genitalia [pl. LII, fig. 1, 2] similar to that of *A. inquitatella* (DEN. & SCHIFF.). Ostium bursae cup-like. Ductus bursae strongly sclerotized with longitudinal ribbing. Bursa copulatrix transparent with one small star-like signum.

A. tristella (DEN. & SCHIFF.) is an Euro-Siberian element widely distributed in Europe. It occurs generally in lowlands. All forms of *A. tristella* (DEN. & SCHIFF.) appear in various regions, dry as well as wet and I did not observe any relation between the region of appearance and the coloration of specimens. Quantitatively the rate of individual forms varies. Relatively the rarest is the dark form with basal stripe. Most often is the light yellow form without basal stripe. *A. tristella* (DEN. & SCHIFF.) appears in Central Europe from the end of July to September, in South and East from June. The caterpillar feeds on grasses.

Examined material:

Spain: 1 male „Hispania Prov. Madrid Escorial, IX 1923“, author's coll.

France: 6 males: „Riestal près Mulhouse Ht.-Rhin, 27 VIII 1950, CH. FISCHER“, author's coll. 2 males: „Courthézon près Orange Vaucluse, 12—20 IX 1950 [and] 15—30 VIII 1951, coll. CH. FISCHER“, author's coll.

Germany: 11 males and females: „Süd-Pfalz Geilweilerhof, 9—24 VIII 1949—1950, leg. DE LATTIN“, author's coll. 23 males and females: „Bav. alp. Kochel, 600 m, Moos, 31 VIII 1949, OSTHELDER leg.“, author's coll. 1 male: „Bei München Südbayern Schleifschein“, author's coll.

Austria: 3 males: „27 VIII 1950, Klagenfurt Kärnten, THURNER leg.“, author's coll. 1 male: „20 IX 1941, Sattnitz Kärnten“, author's coll. 1 male: „Austria Superior Umgeb. v. Linz, 13 VIII 1934, J. KLIMESCH“, author's coll.

Italy: 1 male: „Trentino Lavarone, VIII 1930, A. FIORI“, author's coll. 1 male: „Veneto Cortina, VIII 1937, A. FIORI“, author's coll.

Hungary: 1 male: „Kun Szt. Miklós, SCHMIDT, 1911 IX 13“, author's coll.

Poland: 40 males and females from environs of Szczecin, coll. I. Z. P. A. S., Warszawa. 11 males and females from Hel: Jastarnia, Cha-

hupy, Kuźnice, coll. I. Z. P. A. S., Warszawa. 4 males from Kretowiny, distr. Morąg, 17—25 VII 1953, author's coll. 53 males and females from environs of Warszawa: Podkowa Leśna, Żwir, coll. I. Z. P. A. S., Warszawa. 27 males and females from Puszcza Kampinoska, (near Warszawa), Wydma Łuże, 23 VIII 1949, author's coll. 2 males from Wólka Kozłowska ad Thuszcz, distr. Radzymin, author's coll. 2 females: „Poznań Główna 20 VIII 1951, A. SZMYT leg.“, author's coll. 1 male from Bielinek n/Odrą VIII, author's coll. 10 males and females from distr. Kłodzko, author's coll. 150 males and females from environs of Kraków: Podgórk, Kobierzyn, VIII 1946—1952, author's coll. 14 males and females from Beskidy Mts.: Krynica, distr. Nowy Sącz, ca 600—800 m, Mszana Dolna, distr. Limanowa, ca 600 m, VIII 1949, author's coll. 2 males and 2 females from Tatry Mts., Zakopane 900 m, VIII 1946, author's coll.

USSR: Several males and females from Western Podolia: Dereniówka, Jar Podolski, Ścianka Hłody, Wołczków, VIII 1934—1935, coll. I. Z. P. A. S., Warszawa and coll. TOLL. 3 males from Mińsk, VIII, author's coll.

Agriphila osseella (HAMPSON, 1900)

[Pl. XXX, fig. 6, pl. LXX, fig. 5—7]

Crambus osseellus HAMPSON, 1900, Trans. Ent. Soc. London: 370.

Male: antennae brown from below, from above pale yellow, sometimes with a delicate darker ringing, distinctly serrated. Palps slender, yellow, on outer side yellow finely spotted brown. Frons yellow, with conical sharp protuberance. Head, patagia, thorax and tegulae light yellow. Fore wings in males somewhat variable in shape. I did not examine females of *A. osseella* (HMPS.). Fore wings of the type are distinctly relatively wider and shorter than those of several specimens of *A. osseella* (HMPS.) which I examined. Costal margin almost straight, only near the apex slightly convex. Outer margin delicately bent outwards. Fore wings very delicately lustrous, light yellow, without trace of design. Only at the outer margin there are sometimes several indistinct dark dots. Cilia on the outer margin with delicate lustre, light yellow, sometimes greyish. Hind wings lustrous, slightly darkened. Cilia of hind wings white or creamy.

While investigating a series of *A. osseella* (HMPS.) from Spain I found in two of the seven investigated specimens some anomalies. The first of them has distinct traces of two brownish-

orange transverse bands, by which it approaches rather *A. paleatella* (ZELL.) than *A. osseella* (HMPS.). In the genitalia I found no important differences between this specimen and other ones of *A. osseella* (HMPS.). Because in this group, as I mentioned above, there are no differences in the male genitalia, it is difficult to ascertain whether this is a new species or only an aberration of *A. osseella* (HMPS.). The second of the different specimens of *A. osseella* (HMPS.) is characteristic by the lack of the conical sharp protuberance on frons. It is a most interesting fact for I ascertained the stability of this feature in many species of the genus *Agriphila* HBN. This specimen has the frons quite rounded, smooth, and at least slightly convex. In this case too it is difficult to ascertain its systematic relation to *A. osseella* (HMPS.). It is possible that this is a pathologically developed specimen.

In male genitalia [pl. XXX, fig. 6] I found no stable differences between *A. osseella* (HMPS.) and *A. tristella* (DEN. & SCHIFF.). Uncus pointed. Gnathos with a club-like thickening near the end. Pars. basalis weakly developed, short, finger-like. Aedeagus slightly bent, with numerous (ca 40—60) small cornuti. The biggest cornutus reaches 0,07 mm. Cornuti variable in size to some extent.

A. osseella (HMPS.) is very strongly similar to *A. tristella* (DEN. & SCHIFF.) ab. *paleella* (HBN.). It differs from it by the coloration of antennae which in *A. tristella* (DEN. & SCHIFF.) are sharply darkly ringed while in *A. osseella* (HMPS.) they are uniformly yellow, or at least very weakly darkly ringed. Besides, *A. osseella* (HMPS.) is of somewhat weaker build and is more clearly coloured than *A. tristella* (DEN. & SCHIFF.) ab. *paleella* (HBN.).

A. osseella (HMPS.) is known only from Spain.

Examined material:

Spain: 1 male type: „Typus“, „*osseellus* STGR.“, „Granada“, „ex collect. STAUDINGER“, „*osseellus* HMPS. Type“, coll. Zoological Museum of the Humboldt University in Berlin. 2 males: „Siera Alfacar August“, coll. Museum of the Natural History in Vienna. 1 male: „*Osseellus* HMPS., Granada“, coll. Museum of the Natural History in Vienna. 1 male: „STAUD. Andl. 1884“, coll. Museum of the Natural History in Vienna. 1 male: „1889 Hispan. m. Andalus. STGR.“, coll. I. Z. P. A. S., Warszawa. 1 male: „Hispania Andalusia“, author's coll.

Agriphila paleatella (ZELLER, 1847)

[Pl. XXXI, fig. 6, pl. LXX, fig. 4]

Crambus inquinatellus ZELLER, (nec DENIS & SCHIFFERMÜLLER) 1847.
Isis: 28.

Crambus paleatellus ZELLER, 1847, Isis: 754.

Male: antennae brown from below, from above light yellow, without dark rings. Male antennae distinctly serrated. Palps light yellow without dark spots. Frons light yellow with sharp, conical protuberance. Patagia, head, thorax and tegulae unicoloured, light yellow. Length of fore wing ca 11 mm, width ca 3,5 mm. Costal margin straight, in the middle very slightly bent inwards. Apex rounded. Outer margin very slightly oblique. Fore wing light whitish-yellow, with slight lustre. Traces of two transverse bands marked indistinctly. These run similarly as in *A. inquinatella* (DEN. & SCHIFF.). On the outer margin a row of very indistinct dark spots. Hind wings lustrous, white with similarly coloured cilia.

Male genitalia [pl. XXXI, fig. 6]: uncus pointed, gnathos with a club-like widening near the end. Pars basalis slightly developed, short, finger-like, not much more sclerotized than valva. In the aedeagus of the type there are 14 cornuti, in the specimen from Akschehir (Asia Minor) there are 12 of them. They are of more or less the same size, 0,08 mm, similarly as in *A. brioniella* (ZERNY). I did not examine female specimens.

This species is allied to *A. inquinatella* (DEN. & SCHIFF.), and *A. brioniella* (ZERNY), but distinctly differing from them. It is similar to some extent to *A. inquinatella* (DEN. & SCHIFF.) by the direction of the bands but those in *A. inquinatella* (DEN. & SCHIFF.), if appearing, are always brownish and not yellow as in *A. paleatella* (ZELL.).

In male genitalia [pl. XXXI, fig. 6] we see very distinct differences between these two species. In the aedeagus of *A. paleatella* (ZELL.) there are 12—14 cornuti, relatively big and of more or less uniform size, while in *A. inquinatella* (DEN. & SCHIFF.) there are more cornuti (14—18) and they are of various size. It is easily distinguishable from *A. brioniella* (ZERNY) as well as from *A. inquinatella* (DEN. & SCHIFF.) by the coloration of the bands. Those of *A. brioniella* (ZERNY)

are similarly brown as in *A. inquinatella* (DEN. & SCHIFF.). Besides, the outer band of *A. paleatella* (ZELL.) is more remote from the outer margin and less parallel with it in its lower part than in *A. brioniella* (ZERNY). Male genitalia of these two species are very similar.

A. paleatella (ZELL.) was described from Turkey (Smyrna) and is reported sporadically from Southern Europe (e. g. from Sicilia). I did not examine European specimens, therefore it is difficult for me to say with absolute certainty whether this species occurs in Europe, the fact being quite possible.

Examined material;

1 male from Akshehir (Turkey), coll. Museum of the Natural History in Vienna.

***Agriphila inquinatella* (DENIS & SCHIFFERMÜLLER, 1775)**

[Pl. XXXI, fig. 1, pl. LII, fig. 3, pl. LXXII, fig. 1—5]

Tinea Inquinatella DENIS & SCHIFFERMÜLLER, 1775, Syst. Verz. Schmett. Wien. Geg.: 134.

? *Tinea arbustella* SCHRANK, 1802, Fauna Boica, 2, II: 100.

? *Palparia rorea* HAWORTH, 1811, (nec LINNAEUS), *Lepidoptera Britannica* 3: 489.

Chilo Inquinatellus GERMAR & ZINCKEN, 1817, Magazin Ent. 2: 103.

Pediasia Inquinatalis HÜBNER, 1825, Verz. Bek. Schmett.: 365.

Crambus inquinatellus DUPONCHEL, 1836, 10: 120, pl. 273, fig. 2.

? *Crambus paleatellus* auct. partim.

Antennae brown below, yellowish-white from above with brown ringing. In lighter forms, with reduced design of the wings this ringing is less visible. In strongly darkened forms antennae wholly brown. Male antennae serrate, in female setaceous. Palps yellowish, at sides weaker or stronger spotted brown; this depends on the coloration of the whole moth. The darker specimens have this spotting stronger. From the outer side the palps are always whitish. Frons always light-coloured, white or whitish, sometimes with a delicate brown spotting. Frons always with a strong conical, sharply ended protuberance. Head light, pure white, or (in dark specimens) whitish. Patagia, thorax and tegulae snow-white to dirty-white more or less spotted brown. Length of fore wing varies from

9 to 13 mm, the width 3—4,5 mm. Costal margin slightly convex, apex in male slightly rounded, in female more pointed, outer margin slightly oblique. Fore wing dull or almost dull with light straw-yellow ground, more or less suffused with brown scales. Sometimes, in aberrative forms, ground of fore wing brown. There occur two transverse bands. These are not very distinct, brown, underneath costal margin always reduced. Outer band strongly oblique, somewhat more so than inner one. Inner band in middle of wing thickened by an oblong brown spot. In females there appears generally a reduction of the brown design and suffusion, which caused the description of many aberrations. Investigating large series of *A. inquinatella* (DEN. & SCHIFF.) I came to the conclusion that females with distinctly reduced design are most often found and therefore must be considered as typical. At the outer margin several dark dots, which occur even in forms with mostly reduced design. Cilia lustrous, yellowish-grey to brown. Hind wings with slight lustre, greyish. Specimens from South Europe have the hind wings lighter than these from Europe. I did not examine North European specimens. The darkening of the hind wings occurring in the Central European specimens does not extend, however, to the cilia which is always dirty-white to yellowish-white.

ab. *ambiguella* (STRAND, 1904), Nyt. Mag. Naturvid. **42**: 147.

Specimens with fore wings without design except a dark little spot in the middle of wing. From Norway.

ab. *rotsicuelensis* (STRAND, 1917). Ent. Mitt. 1917, **6**: 300.

Specimens with uniformly brown fore wings. From Rotsiküll (North Eastern Europe).

ab. *obscurior* (SKALA, 1912), Verh. Naturforsch. Ver. Brünn, **51**: 230.

Under this name was described one female with darkened fore wings from Nikolsberg (Moravia).

ab. *amaculella* (SZENT-IVÁNY & UHRIK, 1942), Ann. Hist.-Nat. Mus. National. Hung. Pars Zool. **35**: 118, [pl. LXXII, fig. 4].

Specimens with reduced design on the fore wings. Hungary: Budafok, Budapest, Ofen, Gizellafalva. According to the original photograph of this aberration and three cotypes received from the Hungarian National Museum I stated that the reduction of the design on the wings is not complete in this aberration. There appears a brown suffusion and dark spot in the middle of the wing as well as slight traces of bands. I found a complete reduction of the design in several females collected in Poland. These specimens differ from Hungarian ones distinctly by darker hind wings.

subsp. *nevadensis* (CARADJA, 1910)

Crambus inquatellus var. *nevadensis* CARADJA, D. ent. Zeit. Iris, 24: 109.

Form from Sierra Nevada with lighter whitish-yellow fore wings.

Male genitalia [pl. XXXI, fig. 1]: uncus pointed, gnathos with a club-like widening near the end; of somewhat variable shape. Saccus, valva, and pars basalis similar to that of related species. Pars basalis variable in shape. Valva also variable in shape, ended semicircularly or more pointed. Aedeagus with a characteristic small ventral thorn near the end. Number of cornuti 14—18. They are of various size, from small to relatively big.

In female genitalia [pl. LII, fig. 3] gonapophyses anteriores weakly developed, variable in shape. Lamella subgenitalis connected weakly with ostium bursae by an additional plate. Ostium bursae bowl-like, strongly sclerotized; the width of it 0,6 mm. Ductus bursae 1,2 mm long, strongly sclerotized almost to its end, with a ribbed surface. Bursa copulatrix transparent, with one star-like small signum. The length of the whole apparatus 3—3,5 mm.

A. inquatella (DEN. & SCHIFF.) is one of the more variable species of the genus *Agriphila* HBN. Together with *A. brioniella* (ZERNY) it forms a pair of species very similar to each other. The species also similar to it but not difficult to distinguish from *A. inquatella* (DEN. & SCHIFF.) are *A. paleatella* (ZELL.), *A. nebrodella* (ZERNY) and *A. dalmatinella* (HMPS.). The first two have a somewhat different habitus and they may

be distinguished from *A. inquinatella* (DEN. & SCHIFF.) at the first glance. *A. paleatella* (ZELL.) shows a considerably lighter coloration than *A. inquinatella* (DEN. & SCHIFF.), quite yellow antennae, without even a trace of ringing, and besides the transverse bands on the fore wings are in *A. paleatella* (ZELL.) not brown but yellowish. In male genitalia of *A. paleatella* (ZELL.), in aedeagus there are only 12—14 cornuti and they are more or less uniformly big while in *A. inquinatella* (DEN. & SCHIFF.) there are generally more cornuti and they are of various size. *A. inquinatella* (DEN. & SCHIFF.) can be easily distinguished from *A. nebrodella* (ZERNY) according to the habitus and direction of the transverse bands on the fore wings. Those are in *A. nebrodella* (ZERNY) considerably wider than in *A. inquinatella* (DEN. & SCHIFF.). Besides, the outer band above dorsal margin is little oblique, almost straight, similarly as in *A. brioniella* (ZERNY) and rather distant in this place from the inner band while in *A. inquinatella* (DEN. & SCHIFF.) this band in this place approaches the outer one. Antennae of *A. nebrodella* (ZERNY) are light-coloured without a trace of brown ringing, tegulae and patagia also yellow without dark spotting. In male genitalia the essential difference between these two species is the number of cornuti. *A. nebrodella* (ZERNY) has more than 40 of them while *A. inquinatella* (DEN. & SCHIFF.) not more than 18. Very similar externally to *A. inquinatella* (DEN. & SCHIFF.) but belonging to quite another group is *A. dalmatinella* (HMPS.) This species is, however, very easily distinguished by the lack of the conical, sharp protuberance on frons. Beside *A. dalmatinella* (HMPS.) is always distinctly smaller than *A. inquinatella* (DEN. & SCHIFF.). *A. brioniella* (ZERNY) is the species most similar to *A. inquinatella* (DEN. & SCHIFF.). The specimens with well developed design on the fore wings can be relatively easily distinguished by the direction of the outer band. This band is little oblique above the dorsal margin, almost parallel with outer margin and slightly receding from the inner band similarly as in *A. nebrodella* (ZERNY). In *A. inquinatella* (DEN. & SCHIFF.) the outer band above the dorsal margin is very strongly oblique and approaches visibly the inner one. The specimens with strongly reduced design of the fore wings are sometimes almost

impossible to distinguish. In male genitalia we see distinct differences between these two species. This difference is identical as the difference between *A. inquinatella* (DEN. & SCHIFF.) and *A. paleatella* (ZELL.) (size and number of cornuti in aedeagus). Female genitalia of the species in question are almost identical.

A. inquinatella (DEN. & SCHIFF.) is probably an Euro-Siberian species. Sure localities of this species are known to me only from Europe. It is reported from Mongolia and the Middle East but because of the possibility of confusing this species with other similar ones such reports are not quite certain. The data of its appearance in Mongolia do not raise great suspicions for thus far no species similar to *A. inquinatella* (DEN. & SCHIFF.) are known from Mongolia. The specimens from Mongolia might belong eventually to another, still undescribed species. On the other hand all data from the Mediterranean region are very doubtful for in many cases they may arise from confusing *A. inquinatella* (DEN. & SCHIFF.) with *A. brioniella* (ZERNY), *A. paleatella* (ZELL.), or *A. dalmatinella* (HMPS.). As an example I will mention that in the materials borrowed from the Naturhistorisches Museum in Vienna there was one specimen of *A. dalmatinella* (HMPS.) from Haifa determined as „*inquinatellus*“.

A. inquinatella (DEN. & SCHIFF.) is a xerophilous species confined to lowlands, occurring in July and August; in the South of Europe still in September similarly as other species of the genus *Agriphila* HBN.

Examined material:

France: 1 male: „for de la Hardt Grünhütte Ht.-Rhin, 5 VIII 1944, CH. FISCHER“, author's coll. 1 male and 1 female: „Mulhouse Ht.-Rhin Quart. Relberg, 31 VIII 1939 [and] 20 VIII 1946, CH. FISCHER“, author's coll. 1 female: „Courthézon près Orange Vaucluse, 12—20 IX 1950, coll. CH. FISCHER“, author's coll.

Germany: 8 males and females: „Süd-Pfalz Geilweilerhof, 25 VIII 1950, leg. DE LATTIN“, author's coll.

Austria: 2 males and 1 female: „10—22 VIII 1943—1945, Carinthia Klagenfurt Umg., leg. THURNER JOS.“, author's coll.

Italy: 1 male: „Regio Emilia Cerreto, 12 VIII 1931, A. FIORI“, author's coll. 1 male: „Trentino Val Genova, 16 VIII 1932, A. FIORI“, author's coll. 3 males and female: „Roma Frascati, VII—VIII 1943“, author's coll.

Hungary: 2 females: „Budafok, UHRİK, 1916 VIII 16“, „cotyp“, ab. *amaculella* SZENT-IVANY & UHRİK, author's coll. 1 male „Budafok, UHRİK, 1916 VIII 26“, author's coll. 1 male: „Kanabé, 1913 VIII 27“, author's coll.

Czechoslovakia: 4 males and females: „Bohemia Praha, 11 VIII 1936, Dr. R. SCHWARZ“, author's coll. 1 female: „Bohemia Kačov (Sázava), 12 VIII 1936, Dr. R. SCHWARZ“, author's coll.

Poland: 5 males from Łańsk—Rybaki distr. Olsztyn, 24 VII 1952, author's coll. 164 males and females from Kretowiny, distr. Morąg, 17—25 VII 1953, author's coll. 32 spec. from Szczecin, coll. I. Z. P. A. S., Warszawa. 29 males and females from Hel, VIII, leg. ŚWIDERSKI, coll. I. Z. P. A. S., Warszawa. 1 spec. from Puszcza Białowiecka, VIII, leg. ŚWIDERSKI, coll. I. Z. P. A. S., Warszawa. 8 males from Puszcza Kampinoska (near Warszawa), Wydma Łuże, 10 VIII 1948, author's coll. 8 males and females from Wólka Kozłowska ad Tłuszcz, distr. Radzymin, VIII 1952, author's coll. 5 males from environs of Poznań, VIII 1950, leg. A. SZMYT, author's coll. 6 males from distr. Kłodzko (Sudety Mts.) VII, author's coll. 17 males and females from Podgórk, distr. Kraków, 1—25 VIII 1946—1950, author's coll. 1 male from Jasło—Gorajowice VII 1943 author's coll. 15 males and 1 female from Beskidy Mts.: Mszana Dolna, distr. Limanowa, ca 600 m, Krynica, distr. Nowy Sącz, ca 600 m, VII—VIII 1949—1951, author's coll. Several males and females from Pieniny Mts. ca 600—800 m, coll. I. Z. P. A. S., Warszawa, and coll. TOLL.

USSR: several males and females from Western Podolia: Wolez-ków, Ścianka Hłody, Babińce, VII—VIII, coll. I. Z. P. A. S., Warszawa and coll. TOLL. 1 male from Mińsk, VIII, author's coll.

Agriphila brioniella (ZERNY, 1914)

[Pl. XXXI, fig. 2, pl. LII, fig. 4, pl. LXXII, fig. 7, 8]

Crambus brioniellus ZERNY, 1914, Ann. Hofmus. Wien 28: 298, fig. 4, 5.

? *Crambus inquinatellus* auct. partim.

Antennae brown from below, from above whitish-yellow with distinct brown ringing, which tends to disappear in the forms with reduced design of the fore wings. Palps coloured similarly as in *A. inquinatella* (DEN. & SCHIFF.), whitish yellow on outer side with brown spotting of various intensity. Frons white with strong conical, pointed protuberance as in *A. inquinatella* (DEN. & SCHIFF.). Head white. Patagia yellow-white, sometimes darkened on sides. Thorax and tegulae white-yellow. Length of fore wing varies from 9,3 to 11,5 mm, the width from 3,2 to 4 mm. Costal margin in male almost straight, in female delicately bent outwards. Apex slightly rounded,

outer margin in male rather straight, in female slightly oblique. Fore wing dull or almost dull, with light straw-yellow ground, more or less suffused with brown scales. Two transverse brown bands. Below costal margin the bands tend to disappear. The outer band bent outwards to outer margin, above dorsum it is more or less parallel with outer margin. The inner one similar as in *A. inquinatella* (DEN. & SCHIFF.). Several dark dots at the outer margin. Cilia delicately lustrous, yellowish or brownish. Hind wings lustrous, white yellowish, sometimes slightly darkened greyish, cilia always light coloured, whitish.

Male genitalia [pl. XXXI, fig. 2] generally strongly similar to those of *A. inquinatella* (DEN. & SCHIFF.) and other related species. Gnathos pointed, uncus with club-like thickening varying in shape. Pars basalis weakly developed, short, finger-like. Valva of variable shape, rounded or more pointed. Aedeagus with characteristic small ventral thorn at its end. There are 10—14 cornuti of more or less the same size (0,09 mm).

Female genitalia [pl. LII, fig. 4] delusively similar to those of related species as *A. inquinatella* (DEN. & SCHIFF.) or *A. tristella* (DEN. & SCHIFF.). Gonapophyses anteriores reduced, of variable shape. Ostium bursae bowl-like, generally somewhat deeper than in *A. inquinatella* (DEN. & SCHIFF.). Ductus bursae strongly sclerotized almost to its end. Bursa copulatrix transparent, with one star-like signum.

This species is extremely similar to *A. inquinatella* (DEN. & SCHIFF.) related also to *A. paleatella* (ZELL.) and *A. dalmatinella* (HMPS.). From *A. dalmatinella* (HMPS.) it differs by the presence of the conical protuberance on frons. The difference between *A. inquinatella* (DEN. & SCHIFF.) and *A. brioniella* (ZERNY) is in the direction of the outer band which was discussed in the description of *A. inquinatella* (DEN. & SCHIFF.). From *A. paleatella* (ZELL.) it is distinguishable by the coloration of the bands of the fore wings. These bands are brown in *A. brioniella* (ZERNY), similarly as in *A. inquinatella* (DEN. & SCHIFF.) while in *A. paleatella* (ZELL.) they are yellowish.

The specimens of *A. brioniella* (ZERNY) with strong reduction of the design on fore wings are very difficult to distinguish from similar specimens with reduced design belonging to *A. inquinatella* (DEN. & SCHIFF.).

A. brioniella (ZERNY) is a Mediterranean species reaching its northern border of distribution in Hungary. It is a xerophilous, lowland element.

Examined material:

France: 10 males and females „Courthézon près Orange Vaucluse, 80—100 m, 15—30 VIII 1951, coll. CH. FISCHER“, author's coll.

Italy: 1 male and 2 females: „Roma Frascati, VII—VIII 1943“, author's coll. 1 male: „Italia Liguria Capo di Noli, A[nfang] IX 1944, J. KLIMESCH“, author's coll.

Bulgaria: 1 male „Sutora a. Donau 12 VIII 1933, FUS leg.“, author's coll.

Yugoslavia: 1 male: „Macedonia Ochrida, 20—30 VIII 1937, R. E. WOLFSCHLÄGER“, coll. TOLL.

***Agriphila nebrodella* (ZERNY, 1943)**

[Pl. XXXI, fig. 3, pl. LXXII, fig. 6]

Crambus nebrodellus ZERNY, 1943, Zeit. Wien. Ent. Ges. **38**: 137, pl. IX, fig. 1.

? *Crambus inquinatellus* auct. partim.

Antennae brown from below, from above light straw-yellow, without brown ringing. Palps on outer side dirty-yellow, on inner side yellow. Frons yellow with strong conical, pointed protuberance. Patagia, head, thorax and tegulae yellow. Length of fore wings 14 mm, width 4,6 mm. Costal margin straight, apex slightly rounded. Outer margin below apex slightly bent inwards, further below slightly bent outwards. Fore wing almost dull with light straw-yellow ground. The design brown, distinct. At base of the wing an indistinct, short brown streak. Inner band strongly oblique, light-brown, very slightly visible. On this band in the middle of wing and in the place of median cell distinctly visible brown little spots. Inner band below costal margin completely reduced. Outer band more distinct than the inner one below costal margin also visible; it is crossed by yellow veins. This band below costal margin oblique toward outer margin, above the middle of the wing strongly angled, oblique toward the wing base, slightly bent out toward it. Several small dark dots at the outer margin. Cilia on the outer margin with very slight lustre, light-straw yellow. Hind

wings with slight lustre, pure white, with similarly coloured cilia.

Male genitalia [pl. XXXI, fig. 3]: uncus pointed, gnathos with a club-like widening at its end. Valva strongly narrowed near the end, rather pointed. Pars basalis slightly developed, short, similar to that of *A. inquatella* (DEN. & SCHIFF.) and related species. Aedeagus with a small ventral thorn near the end. About 50 small cornuti.

Externally this species is rather similar to those related with it such as *A. inquatella* (DEN. & SCHIFF.) or *A. brioniella* (ZERNY) but differing from them by somewhat different habitus. The outer band in *A. nebrodella* (ZERNY) is distinctly marked while in the remaining two species it tends to disappear. This band below its break is slightly bent toward the wing's base while in *A. inquatella* (DEN. & SCHIFF.) and *A. brioniella* (ZERNY) it is straight or slightly bent toward the outer margin. Besides, *A. nebrodella* (ZERNY) is distinguishable by its size; it is visibly bigger than *A. inquatella* (DEN. & SCHIFF.) and *A. brioniella* (ZERNY). In genitalia it differs in the first place by the number of cornuti; there appear about 18 of them in *A. inquatella* (DEN. & SCHIFF.) and about 14 in *A. brioniella* (ZERNY).

A. nebrodella (ZERNY) is a Sicilian endemic, known from three males collected at Mistretta in September 1938 by LUNAK and REISSER in 1000—1100 m.

Examined material:

Sicily: 1 male (paratype): „Sicilia Mistretta, 1100 m, 23 IX 1938, leg. R. LUNAK“, coll. Museum of the Natural History in Vienna. 1 male (paratype): „Mistretta 1000 m Sicilia, 23 IX 1938, coll. H. REISSER Wien“, coll. Museum of the Natural History in Vienna.

GROUP 4

Group type: *Agriphila latistria* (HAW.)

On the fore wing appears silvery-white basal stripe. In male genitalia in aedeagus there are several (5—10) cornuti. In female genitalia ostium bursae relatively narrow.

Agriphila vallicolella (COSTA, 1885)

[Pl. XXXIII, fig. 3, pl. LXXIII, fig. 6]

Crambus vallicolellus COSTA, 1885, Bull. Soc. Ent. Ital. 17: 252.

Antennae brown, distinctly serrate. Frons whitish with pointed conical protuberance. Palps on outer side brown, finely spotted lighter, on inner side whitish. Head whitish. Patagia on sides light brown, in the middle whitish. Thorax whitish. Tegulae brown. Length of fore wing 12 mm. Costal margin at base of wing slightly convex, in middle very delicately concave. Apex rounded. Outer margin slightly oblique, delicately bent outwards. Ground of fore wing light brown. There appears whitish basal stripe reaching to outer margin. This stripe is cut by slightly visible outer band. Band below costal margin oblique toward outer margin in the point of crossing basal stripe broken toward wing base, above dorsal margin vertical to the latter. More or less in the middle of the wing on the upper edge of the basal stripe there is a black dot. Basal stripe smooth from above, with two little teeth from below. Several small, not very distinct, dark dots at the outer margin. Cilia on termen lustrous, brown-greyish, darker at base, in the point of meeting of basal stripe with outer margin cut twice with white lines. Hind wings with slight lustre, light-coloured, grey-whitish. Cilia white.

Male genitalia [pl. XXXIII, fig. 3] similar to those of *A. latistria* (HAW.). Uncus and gnathos somewhat more slender than in *A. latistria* (HAW.). Uncus pointed, gnathos with a very slight widening near the end, rounded. Pars basalis short, finger-like. Aedeagus shorter than the whole apparatus, with a characteristic ventral small thorn near the end. In the aedeagus there are 7 cornuti of size and shape similar to those of *A. latistria* (HAW.).

The species was described from Corsica by COSTA (1885). I identified one male specimen with COSTA's original description. Because I am not sure whether this determination is right I quote the description here: „Capo rivestito di squame argentine. Palpi cinerino-giallicci con ciuffo dorsale basilare di squame argentine allungate. Le ali anteriori sono di color giallo dorato con una striscia longitudinale bianco-perlacea,

la quale parte dall'angolo omerale e si arresta si cinque sesti della lunghezza, verso la metà divisa in due da una fascia molto obliqua fosca, più larga ed incarnata nella parte interna anteriore (ali in riposo), assotogliata dall'estremo esterno-posteriore. La metà posteriore di detta striscia perlacea nel margine interno e fiancheggiata da una serie di linee angolo se legate l'una all'altra, le quali girando dietro l'estremità della fascia raggiungono il margine sterno dell'ala. Queste linee fosche sono esternamente fiancheggiate da altre simili bianche. Il margine posteriore è diritto (non emarginato); nella metà superiore ha due punti di color nero intenso, nella inferiore a bruno; la frangia è argentina, transversata da una linea canerina. Ali posteriori di un bianco sporco, che tende un poco al cenerino verso il margine. Lung. con le ali mill. 11".

Examined material:

1 male spec.: „Mistretta 1000 m Sicilia, IX 1937, coll. H. REISSER, Wien“, author's coll.

***Agriphila latistria* (HAWORTH, 1811)**

[Pl. XXXII, fig. 3—6, pl. XXXIII, fig. 1, 2, 4, pl. LI, fig. 2, pl. LXXIII, fig. 1—5]

Palparia latistria HAWORTH, 1811, *Lepidoptera Britannica* 3: 485.

Crambus latistrius STEPHENS, 1834, *Illustr. Brit. Entomol. Haustellata* 4: 425.

Crambus guenellus DUPONCHEL, 1836, *Hist. Nat. Léop. France* 10: 289 pl. 283, fig. 7.

Antennae brown from below, from above whitish or brownish, in male distinctly serrated, in female setaceous. Palps on the outer side brown, spotted white, on the inner side whitish. Frons whitish with strong conical protuberance. Head dirty-whitish to pure white. Patagia as well as thorax white in the middle, brown at sides. Tegulae brown, sometimes whitish-brown. Length of fore wing varies from 10 to 12 mm, width from 3,1 to 3,7 mm; in the typical from 11 to 12 mm, in subsp. *monotaeniella* (H.-S.) 10 to 11,5 mm. Costal margin of the fore wing almost straight, sometimes very delicately bent in the middle, in female slightly bent outwards. Apex slightly rounded, in female more pointed. Outer margin slightly

oblique, in female under the apex very delicately bent inwards. Fore wing dull or almost dull, light brown to brown, with snow-white basal stripe. This stripe reaches outer margin and sometimes „is contiguous“ on the cilia. It is relatively wide, and is not narrowing at the end. Cilia on the outer margin with delicate lustre, similarly coloured as ground of fore wing, sometimes crossed by basal stripe. Hind wings whitish, often darkened brownish at margins. Cilia of the hind-wings snow-white.

subsp. *monotaeniella* (HERRICH-SCHÄFFER, 1856).

Crambus Monotaeniellus HERRICH-SCHÄFFER, 1856, Syst. Bearb. Schmett. Eur., 6: 145, Sppl. 162.

Crambus vectifer ZELLER, 1863, Chil. Cramb. Gen. Spec.: 33.

A race from South Europe somewhat smaller than the typical one.

Male genitalia [pl. XXXII, fig. 3—6, pl. XXXIII, fig. 1, 2, 4]: uncus and gnathos slender. Uncus pointed. Gnathos generally slightly thickened club-like at the end. Valva variable in shape, slightly pointed or rounded. Pars basalis also variable in shape, similarly developed as in previous species. Aedeagus similar as in the previous species, with a small characteristic thorn near the end. There are 5—9 cornuti.

Female genitalia [pl. LI, fig. 2]: gonapophyses anteriores strongly reduced. The connection between lamella subgenitalis and ostium bursae very weak, made of delicate membrane. Ostium bursae relatively narrow, a little similar to that of *A. deliella* (HBN.). Its edges are slightly turned over collar wise. Ductus bursae rather well sclerotized, with ribbed surface. Bursa copulatrix with one star-like signum.

This species was described several times by various authors. *Crambus guenellus* of DUPONCHEL (1836) was recognized as a synonym of HAWORTH'S species *Palparia latistria*. I treat *Crambus monotaeniellus* H.-S. only as a subspecies of *A. latistria* (HAW.) which I will explain later on. In 1863 ZELLER in his monograph of *Crambidae* (1863) described a new species, *Crambus vectifer* ZELL. It was treated by later authors as either a subspecies of „*Crambus*“ *latistrius* (HAW.) or a subspecies of „*Crambus*“ *monotaeniellus* H.-S. (SPULER 1910, STAUDINGER

1901). Other authors as TURATI (1901) treated it as species bona. To solve this problem I borrowed from Zoological Museum of the Humboldt University in Berlin the type of *Crambus vectifer* ZELL. which is from Sicily and a preparation of the genitalia of the type of *Crambus monotaeniellus* H.-S. from Mt. Olympus. In the first as well as in the second case these were males. I found no important differences in the genitalia of these two specimens according to which they might be treated as two different species or races. According to ZELLER (1863) in *A. monotaeniella* (H.-S.) the white basal stripe on the fore wing is contiguous on the cilia („in cilia exeunte“) of the outer margin. In *A. vectifer* (ZELL.), on the other hand, according to ZELLER'S original description this stripe is not prolonged on the cilia of the outer margin. After the investigation of the type of *Crambus vectifer* ZELL. I stated that the cilia on the outer margin of the fore wing in the point where the basal stripe touches the outer margin, are interrupted by two white lines. After studying the specimens which I determined as belonging to *A. latistria* (HAW.) and to its subspecies *monotaeniella* (H.-S.) I stated that the mentioned feature is very variable. This white interruption of the cilia occurs generally as two or three lines which are sometimes merged with each other, which gives the impression that the basal stripe is prolonged on the cilia. I found such specimens in the materials from England, as well as in materials from South Europe, Tunisia and Syria. In spite of thorough investigation of these supposed two species or forms I found no real differences between them neither in the structure of their genitalia or in their habitus. To make sure whether *A. monotaeniella* (H.-S.) is a separate species or only a form of *A. latistria* (HAW.) I investigated thoroughly a series of specimens of this moth from England from where it was described by HAWORTH (1811), as well as from Germany and France. I stated that there are no important differences in the male and female genitalia as well as in the habitus between the specimens from North Europe and Mediterranean region besides the fact that the North European specimens have generally a somewhat greater expansion of the fore wings. This convinced me that most probably the form described by HERRICH-SCHÄFFER (1856)

is only a subspecies of *A. latistria* (HAW.). Of course in such case it is impossible to be quite certain. Biological investigations might have solved this problem definitely.

A. latistria (HAW.) is a halo-biontic, xerophilous species occurring on the sea shores in North, and Western Europe, in Mediterranean regions, besides in midland saline regions. In Northern Europe it appears in August while in the South it flies till the end of September. Caterpillar feeds on grasses.

Examined material:

France: 1 male: „Gallia Vannes, 27 VIII“, author's coll.

England: 6 males: „Brighton Sussex, coll. WITTLE“, author's coll.

Holland: 4 males and 1 female: „Bussum, VIII 1946, coll. C. DOETS“, author's coll.

Germany: 3 males: „Ost-Fries. Inseln Borkum Süd-Dünen, 13 VIII 1935, E. JÄCKH“, author's coll. 10 males and females from Pfalz, Hassloch, VIII—IX 1953, leg. JÖST, author's coll.

Italy: 2 males: „Bologna Casalecchie, 21 IX 1935, A. FIORI“, author's coll. 1 male spec.: „Italia Liguria Noli (Slavona), 15—25 IX 1951, J. KLIMESCH“, author's coll.

Sicily: type of *Crambus vectifer* ZELL.: „Sicilia“, „Origin“, „*vectifer* STGR. type“, coll. Zoological Museum of the Humboldt University in Berlin. 1 male spec.: „Sicilia Madonna, 1000', IX 1907, coll. KRÜGER“, coll. TOLL.

Greece: male copulatory apparatus of the type of *Crambus monotaeniellus* H.-S.: „*Crambus monotaeniellus*, Olymp“, coll. Zoological Museum of the Humboldt University in Berlin.

GROUP 5

Group type: *Agriphila poliella* (TREITSCH.)

I place only one species here viz. *A. poliella* (TREITSCH.) which is simultaneously the type of the group. It is distinguished from other representatives of the genus *Agriphila* HBN. by the structure of genitalia as well as by the external habitus. In the male genitalia pars basalis is not finger-like as normally in other species of *Agriphila* HBN. but is developed as a rounded projection. In female genitalia ostium bursae weakly developed, only a little wider than ductus bursae. The design of fore wings is absent except a small dark spot below costal margin in the outer part of the median cell.

***Agriphila poliella* (TREITSCHKE, 1832)**

[Pl. XXXII, fig. 1, pl. LII, fig. 8, pl. LXXIII, fig. 7, 8]

? *Tinea lotella* HÜBNER, 1810—1813, Samml. Eur. Schmett.: pl. 49, fig. 334.*Chilo Poliellus* TREITSCHKE, 1832, Schmett. Eur. 9: 113.*Crambus poliellus* DUPONCHEL, 1836, Hist. Nat. Lép. France 10: 275, pl. 283, fig. 5.

Antennae brown-grey, in male distinctly serrate, in female setaceous. Palps long, slender, brown-grey, finely spotted lighter. Frons with strong protuberance, rounded, brown-grey. Patagia and head coloured similarly as frons. Thorax and tegulae brown-grey, finely distinctly spotted lighter. Length of fore wing varies from 9,2 to 12 mm, width from 2,5 to 3,5 mm. Females are smaller than males. Fore wing very slender, costal margin convex, the apex in male rounded, in female pointed. Outer margin in male slightly, in female strongly oblique. Fore wing in male dull, brownish-grey, in female strongly lightened to whitish. Transverse bands completely absent. A small dark spot below costal margin in the outer part of median cell appears as the only distinct element of the design. This, however, is sometimes indistinct, too. In male the base of vein *r* marked yellowish. In female veins whitish, besides a whitish suffusion above dorsal margin. Several dark dots on outer margin. Cilia on the outer margin with strong metallic lustre, olive-golden. Hind wings with a very delicate lustre, in male grey, in female lighter, somewhat transparent. Cilia of hind wings greyish.

Male genitalia [pl. XXXII, fig. 1]: uncus pointed. The length of gnathos corresponds to that of uncus. It is widened club-like near the end. Pars basalis of the shape of a rounded sheet, more distinctly sclerotized than the rest of valva. Aedeagus shorter than the whole apparatus with a small characteristic ventral thorn at the end. There are several cornuti in it.

Female genitalia [pl. LII, fig. 8]: gonapophyses anteriores almost completely reduced. The junction of lamella subgenitalis with ostium bursae weak, membranous. Ostium bursae not very much wider than ductus bursae, very short. Ductus

bursae straight, without loops, to the half of its length slightly wrinkled and somewhat more sclerotized than its remaining part. One star-like signum on the bursa copulatrix.

A. poliella (TREITSCH.) is a species known thus far generally from Central and Eastern Europe. It occurs in sandy regions in August and September.

Examined material:

Poland: 3 males from Bielinek n/Odra, VIII, author's coll. 64 males and females from Katowice-Ligota, 29 VIII — 1 IX 1951, author's coll. 23 males and females: „Poznań Główna, 20 — 27 VIII 1950, leg. A. SZMYT“, author's coll. 2 males: „Podkowa Leśna, distr. Blonie, 26 VIII 1945, leg. S. ADAMCZEWSKI“, author's coll. 1 male spec. from Puszcza Kampinowska (near Warszawa) Wydma Łuże, 22 VIII 1950, author's coll.

USSR: 3 male spec.: „Kołodróbka, pow. Zaleszczyki, 1 VIII 1934, leg. S. TOLL“, (Western Podolia), coll. TOLL.

GROUP 6

Group type: *Agriphila cyrenaicella* (RAG.)

I include here only one species, viz. *A. cyrenaicella* (RAG.). Basal stripe on the fore wing absent. There appear two slightly visible transverse bands. Outer margin beneath the apex slightly concave. In the aedeagus there appear very numerous cornuti. In female genitalia ductus bursae distinctly wider than the ostium bursae.

Agriphila cyrenaicella (RAGONOT, 1887)

[Pl. XXXI, fig. 5, pl. LII, fig. 7, pl. LXXIV, fig. 8]

Crambus cyrenaicellus RAGONOT, 1887, Bull. Soc. ent. France: 138.

Crambus permixtellus KALCHBERG, 1897, Dtsch. Ent. Zeit. Iris 10: 186.

Antennae brownish-grey, sharply ringed, whitish; in male serrate from below, in female setaceous. Palps brown-grey, finely spotted whitish. Frons greyish, with sharp conical protuberance. Head greyish. Patagia, thorax and tegulae brownish-grey, finely spotted lighter. Length of the fore wing

varies from 9 to 10 mm, width from 3,1 to 3,3 mm. Costal margin straight, sometimes slightly bent outwards. Apex rather pointed, outer margin in male straight, in female slightly bent inwards. Ground of the fore wing dull brownish-grey, in places lightened to whitish and darkened grey. Inner band indistinct, narrow, brownish. This band below costal margin forms a long narrow tooth, pointed toward the outer margin, below sharply angled, almost vertical to dorsal margin. Outer band also indistinct, in the shape of narrow brown line bordered with white in places. In its upper part it is strongly arched toward outer margin, above dorsal margin it forms a sharp angle in shape of a tooth. Above this tooth on the inner side of outer band lies a dark grey spot with edges not sharply bordered. Cilia on the outer margin lustrous greyish, with distinct metallic lustre at their base. Hind wing with slight lustre, white, at apex slightly darkened greyish. Cilia of hind wing white.

Male genitalia [pl. XXXI, fig. 5]: uncus pointed, but less than in the species of previous groups. Gnathos with slight thickening at the end. Valva with pars basalis of similar shape as in related species of *Agriphila* HBN. Valva at the end a little pointed. Aedeagus straight, wide, its length almost equals the length of the whole copulatory apparatus. It is provided with a characteristic, small ventral apical thorn. In the aedeagus there are very numerous (about 100) cornuti.

In the female genitalia [pl. LII, fig. 7] gonapophyses anteriores developed as wide thickenings of lamella subgenitalis. The accretion of lamella subgenitalis to ostium bursae made of delicate, very weak membrane. Ostium bursae cup-like, much smaller than in such species as *A. inquinatella* (DEN. & SCHIFF.) or *A. culmella* (L.). Ductus bursae behind ostium bursae strongly narrowed, before bursa copulatrix there is a second distinct narrowing. Bursa copulatrix transparent with one star-like small signum.

AMSEL (1940) stated that *Crambus cyrenaicellus* RAG. and *Crambus permixtellus* KALCHB. are identical species.

A. cyrenaicella (RAG.) is a Mediterranean element, generally distributed in North Africa, but reported by MARIANI (1939)

from Sicily and South Italy. It appears in September and October.

Examined material:

Tripolitania: 6 males: „Tripolitania Jefren, X 1935, A. Fiori“, author's coll.

GROUP 7

Group type *Agriphila graphella* (CONST.)

Three species belong here, very much related to each other, viz. *Agriphila graphella* (CONST.), *A. hungarica* (SCHMIDT) and *A. tersella* (LED.). In the habitus they have two transversal bands on the fore wings, which are sometimes reduced. Basal stripe is absent. In male genitalia pars basalis is normally developed similar as in related species of previous groups, aedeagus without cornuti. In female genitalia ostium bursae cup-like, but distinctly deeper than that of related species as *A. inquinatella* (DEN. & SCHIFF.) or *A. brioniella* (ZERNY). All three species have relatively limited distributions. They occur generally in the Mediterranean region.

Agriphila graphella (CONSTANT, 1884)

[Pl. XXXIII, fig. 6, pl. LI, fig. 9, pl. LXXIV, fig. 1—2]

Crambus graphellus CONSTANT, 1884, Ann. Soc. ent. France: 207, pl. 9, fig. 5.

Antennae grey-brown, unicoloured, in male deeply serrate from below, in female setaceous. Palps darker or lighter brown, outside spotted lighter, from inside lighter-coloured. Frons slightly convex, rounded. Frons and head distinctly lighter than thorax. Patagia, thorax and tegulae brown, unicoloured. Length of the fore wing ca 12 mm, width in male 4,3 mm, in female 4 mm. Fore wing of female slender, a little narrower than that of male. Costal margin almost straight, apex rather pointed, outer margin oblique almost in the same degree in male as in female. Ground of fore wing dull grey, or pale brown. Transverse bands indistinct, in places fused with ground.

Inner band below costal margin strongly arched toward the outer margin, a little above the middle of the wing angled obliquely toward wing base. Only middle part of this band distinctly visible. Below costal margin and above dorsal margin this band tends to disappear. Outer band similarly coloured as inner one, widely arched toward outer margin, above dorsal margin with sharply pointed tooth pointing toward wing base. Several small dark dots on the outer margin. Cilia on the outer margin almost dull, nearly unicoloured, grey to light brown. Hind wings with slight lustre, light greyish or brownish, a little paled to whitish in the middle. Cilia of hind wings white or creamy-white, with a basal streak of scales, which is a little darkened in places.

Male genitalia [pl. XXXIII, fig. 6] of similar constitution as in many species of *Agriphila* HBN. Uncus sharply pointed, gnathos with a club-like thickening at the end. Valva rounded, pars basalis weakly developed, of similar shape as in species of previous groups. Aedeagus narrow, visibly shorter than the whole apparatus, with distinct little ventral apical thorn. Cornuti absent.

In female genitalia [pl. LI, fig. 9] lamella subgenitalis with weakly developed short gonapophyses anteriores. Ostium bursae deep, cup-like. Ductus bursae relatively wide, with visible narrowing behind ostium bursae. It is several times wider than that of related species *A. hungarica* (SCHMIDT) and *A. tersella* (LED.). Because I was able to examine but one female of the species in question I do not know if this is a specific feature. It is possible that the width of ductus bursae of the species of this group shows some fluctuations. At the edges of ostium bursae I found two distinct bristles, which I did not find in the two related species *A. hungarica* (SCHMIDT) and *A. tersella* (LED.).

Agriphila graphella (CONST.) is a Mediterranean element, which was also reported from North Africa.

Examined material:

Yugoslavia: 1 male: „Šućurác b. Spalato, NOVAK, 15 VI“, author's coll.

Italy: 1 female: „Emilia Casinalbo, 5 IX 1920, A. FIORI“, author's coll.

Agriphila hungarica (SCHMIDT, 1910)

[Pl. XXXIII, fig. 5, pl. LI, fig. 7, pl. LXXIV, fig. 3—4]

Crambus hungaricus SCHMIDT, 1910, Archivum Zool. 1: 31.

Antennae unicoloured, brown-grey, in male distinctly serrate, almost pectinate, in female setaceous. Palps brown outside, or brown with fine creamy spotting, from inside paler, whitish. Frons greyish, in male slightly convex, in female strongly convex, rounded, smooth. Head whitish-grey. Patagia brown on sides, whitish in the middle. Thorax and tegulae brown. Length of the fore wing about 12 mm, width about 4,3 mm. Costal margin visibly bent outwards. Apex in male slightly rounded, in female pointed. Outer margin in female more oblique than in male. Fore wing in male relatively wider than in female. Ground of fore wing brown. Veins marked a little lighter than the ground. Traces of outer and inner band very indistinct. They run similarly as in *A. graphella* (CONST.), but inner band above dorsal margin is less oblique than in *A. graphella* (CONST.). Very indistinct small dark dots on the outer margin. Cilia on the outer margin dull brown, in female slightly lighter than the ground of the wing. Hind wings with slight lustre, whitish-grey. Cilia of hind wings similarly coloured as ground of the wing.

Male genitalia [pl. XXXIII, fig. 5] delusively similar to those of *A. graphella* (CONST.). Valva somewhat more pointed than in *A. graphella* (CONST.), but I do not consider this feature as important, because the shape of the valva is a very variable feature in the species of the genus *Agriphila* HBN. Aedeagus a little shorter than in *A. graphella* (CONST.). Its length is 0,9 mm. while in *A. graphella* (CONST.) it is 1,1 mm. long. The size of the whole copulatory apparatus is identical in both species (1,5 mm.). Cornuti absent.

Female genitalia [pl. LI, fig. 7] very similar to that of *A. graphella* (CONST.) and *A. tersella* (LED.). Ostium bursae in the shape of a deep cup. Ductus bursae very narrow, while in the one examined specimen of *A. graphella* (CONST.) it is much wider than in the species in question. Unfortunately I have only one female of *A. hungarica* (SCHMIDT) and one of *A. graphella* (CONST.) and I could not ascertain if this feature

is constant. Ductus bursae more sclerotized than bursa copulatrix. One signum.

Agriphila hungarica (SCHMIDT) is very similar to *A. graphella* (CONST.) and by several authors considered as only a subspecies of it. However, I think that they are two distinct species. Fore wing of *A. hungarica* (SCHMIDT) is wider and relatively shorter than that of *A. graphella* (CONST.). Apex in male of *A. hungarica* (SCHMIDT) is rather rounded while in *A. graphella* (CONST.) it is pointed. Outer margin in female of *A. hungarica* (SCHMIDT) is visibly more oblique than in *A. graphella* (CONST.). In female genitalia I found at the opening of ostium bursae of *A. graphella* (CONST.) two strong bristles, which are absent in *A. hungarica* (SCHMIDT).

Agriphila hungarica (SCHMIDT) is a Pannonian element, known from Hungarian Pusta and from Vienna. It appears in July and August.

Examined material:

Hungary: 2 males: „K. Szt. Miklós, SCHMIDT 30 VIII 1913“, „cotyp“, author's coll. 1 female: „Mezőberény, SCHMIDT“, „cotyp“, author's coll.

***Agriphila tersella* (LEDERER, 1855)**

[Pl. XXXIV, fig. 2, pl. LI, fig. 8, pl. LXXIV, fig. 5—6]

Crambus tersellus LEDERER, 1855, Verh. Zool.-bot. Ver. 5: 220, pl. 4, fig. 6.

Antennae brownish, unicoloured, in male very deeply serrate, almost pectinate, in female setaceous. Palps long, slender, brownish from outside, white on inside and from below. Frons slightly convex, rounded. Frons and head dirty greyish-whitish. Fore wing of female is visibly more slender and narrower than that of male. Length of the fore wing of male-type 12 mm, that of the female-type 13 mm; the width of the male-type ca 5 mm, that of the female-type 4 mm. Costal margin of male visibly convex, that of female only slightly. Apex of fore wing in the male rather rounded, that of female more pointed. Outer margin straight, oblique. Ground of fore wing of male brown, that of female light dirty yellow. Two transverse bands in shape of brown rather indistinct streaks. In female these bands are visibly more distinct and

sharply outlined than in male. Outer band in the upper part widely arched toward outer margin, above dorsal margin with well developed sharp tooth pointed towards the wing base. Inner band below costal margin angled, then strongly oblique toward the wing base.

Male genitalia [pl. XXXIV, fig. 2] of similar constitution as in other species of this group, but visibly more elongated than the genitalia of these species. Uncus and gnathos somewhat longer than in *A. graphella* (CONST.). Gnathos with very weak widening at the end. Valva rounded, long. Pars basalis a little narrower than in *A. graphella* (CONST.) Aedeagus much shorter than the whole copulatory apparatus (1,2 mm long), narrow, without cornuti, with characteristic small ventral thorn at the end.

In female genitalia [pl. LI, fig. 8] ostium bursae in shape of a deep rounded cup. Ductus bursae very narrow, weakly sclerotized, transparent. One small star-like signum.

A. tersella (LED.) is a Mediterranean species, in Europe reported from Sicily (MARIANI, 1939).

Examined material:

Holotype: „Martin“, „coll. LED[ERER]“, „Origin“, „*tersellus* LD.“.

Allotype: „Martin“, „coll. LED[ERER]“, „Origin“, „*tersellus* LD.“, coll. Zoological Museum of the Humboldt University in Berlin.

GROUP 8

Group type: *Agriphila trabeatella* (H.-S.)

I include here one European species, viz. *A. trabeatella* (H.-S.) On the fore wing appears an indistinct basal stripe, which reaches almost to the outer margin. In male genitalia cornuti absent.

Agriphila trabeatella (HERRICH-SCHÄFFER, 1849)

[Pl. XXXII, fig. 2, pl. LI, fig. 5, pl. LXXIV, fig. 7]

Crambus Trabeatellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 57, Sppl. 158.

Crambus divisellus DE JOANNIS, 1888, Ann. Soc. ent. France: 273, pl. 6, fig. 4.

Antennae brown, unicolour, in male distinctly serrate, in female setaceous. Palps brown-grey from outside, finely sharply spotted lighter, white from inside. Frons white with strong conical protuberance. Head white. Patagia, thorax and tegulae brownish. Length of the fore wing 7—9 mm, the width 2—2,6 mm. Costal margin slightly convex. Apex pointed in male as well as in female. Outer margin slightly oblique, slightly bent outwards. Ground of fore wing slightly lustrous, brown to light-brown-yellow. There appears an indistinct basal stripe which reaches almost to outer margin. It has a very indistinct upper edge fused with ground of wing. Lower edge rather sharply bordered. Basal stripe obliquely cut at its end, and bordered dark in this place. Sometimes behind basal stripe there appear further paler blurs. Below basal stripe a small dark streak. The dark dots on outer margin well developed. Cilia on outer margin lustrous, greyish, unicolour. Hind wings lustrous, whitish, with snow-white cilia.

Male genitalia [pl. XXXII, fig. 2] weakly built, of similar shape as in the related species of the genus *Agriphila* HBN. Uncus sharply pointed, gnathos with distinct widening at its end. Pars basalis narrow, pointed. Valva narrow, more elongated than in related species. Aedeagus shorter than the whole copulatory apparatus, almost straight, narrow, without cornuti. Small ventral apical prong present.

Female genitalia [pl. LI, fig. 8]: gonapophyses anteriores weakly developed. Ostium bursae of the shape of a cup, somewhat similar as in *A. inquatella* (DEN. & SCHIFF.). Ductus bursae narrow, strongly sclerotized with ribbed surface behind ostium bursae, then made of transparent chitin. Bursa copulatrix transparent, with one star-like signum.

A. trabeatella (H.-S.) is a Mediterranean element. On the continent of Europe it is rather rare, and more common on Malta and Sicily. It appears from August to October.

Examined material:

Several males and females from Malta, leg. DE LUCCA, author's coll.

GROUP 9

Group type: *Agriphila biarmica* (TNGSTR.)

I place only one species here, *A. biarmica* (TNGSTR.). It differs from other species of *Agriphila* HBN. by its habitus; it does not, however, differ in genitalia.

***Agriphila biarmica* (TENGSTRÖM, 1865)**

[Pl. XXXI, fig. 4, pl. LI, fig. 6, pl. LXXV, fig. 6—8]

Crambus biarmicus TENGSTRÖM, 1865, Horae Soc. Ent. Ross. 3: 49, pl. 2, fig. 1—2.

Antennae in male brown, distinctly serrated. In female antennae setaceous, from above whitish, slightly ringed light-brown, brown underneath. Male palps brownish, female whitish. Frons slightly convex, smooth, rounded. Frons, head, patagia, thorax and tegulae in male brownish, sometimes lighter in places, in female whitish. Length of fore wing varies from 7,5 to 8 mm, width is 3,5 mm. Costal margin very slightly convex, apex rather pointed than rounded, outer margin slightly bent outwards. Fore wing dull, in male brownish, paled to whitish at places, in female ground whitish. Two transverse bands. Outer band below costal margin oblique toward the outer margin, above middle of wing arched toward wing base, with very weakly marked tooth above dorsal margin. This band is white-brown. Female between outer band and outer margin has a transverse blurred brown line. Inner band wider than outer one, more or less parallel to it, without a tooth above dorsal margin. Several distinct black dots on the outer margin. Cilia on the outer margin lustrous, brownish, in females paler, whitish. Hind wings brown. Cilia of hind wings whitish.

subsp. *alpina* subsp. nov. [pl. LXXV, fig. 8, ♂]

The specimens from Alps differ distinctly by the coloration from the Scandinavian specimens of the typical form. Males have the fore wings uniformly brown-grey, nearly without design, while the typical form from Scandinavia has a distinct

design on its fore wings. Females approach the typical form, however, their fore wings are somewhat narrower, darker, with an outer band narrower than in the typical form. I did not find any important differences in genitalia between this form and the typical one. 3 males (holotype and two paratypes) and 1 female (allotype) from Sellajoch (Alps), coll. TOLL.

Male genitalia [pl. XXXI, fig. 4] of similar build as in the related species of *Agriphila* HBN. Uncus pointed. Gnathos with a club-like thickening at the end. Pars basalis weak, short, finger-like, not much more sclerotized than the rest of valva.

In female [pl. LI, fig. 6] gonapophyses anteriores reduced. Lamella subgenitalis weakly connected with ostium bursae. Ostium bursae not much wider than ductus bursae, weakly visible. Ductus bursae weakly sclerotized, transparent, short. Bursa copulatrix also transparent. One small star-like signum.

A Boreo-Alpine species, known from Scandinavia and Alps. Thus far not reported from Tatry Mts. It occurs in June and July. The biology of the caterpillar unknown.

Examined material:

Typical form: Scandinavia: 1 male: „Finlandia Otava Umg. (Mikkeli), 1935, leg. BRANDT“, author's coll. 1 male: „Tindi, 12 VII, ZELL. Coll. 1884“, author's coll. 1 male: „Tb Pyhähäkki, 26—29 VI 1941, HACKMANN“, author's coll. 1 female: „Fennia“, coll. I. Z. P. A. S., Warszawa.

subsp. *alpina* subsp. nov.: Alps: 3 males and 1 female (types): „F., 13 VII 1898, Sellajoch“, coll. TOLL.

Section B

The species belonging here are characteristic by a better developed pars basalis in the male genitalia. It has the shape of a long finger-like process, reaching to a half or 3/4 of valva length.

GROUP 1

Group type: *Agriphila geniculea* (HAW.)

All three species of the section B closely related to each other belong here: *A. geniculea* (HAW.), *A. tolli* (BLESZ.) and

A. dalmatinella (Hmps.). The shape and number of cornuti in the aedeagus are the most important features.

***Agriphila geniculea* (Haworth, 1811)**

[Pl. XXXIV, fig. 5, pl. LII, fig. 5, pl. LXXV, fig. 1—3]

Palparia geniculea HAWORTH, 1811, *Lepidoptera Britannica* 3: 489.
Tinea immistella HÜBNER, 1810—1813, *Samml. Eur. Schmett.*: pl. 53,
 fig. 364.

Pediasia Immistalis HÜBNER, 1825, *Verz. Bek. Schmett.*: 365.

Crambus inquinatellus STEPHENS (nec DENIS & SCHIFFERMÜLLER),
 1834, *Illustr. Brit. Entomol. Haustellata* 4: 327.

Crambus angulatellus DUPONCHEL, 1836, *Hist. Nat. Lép. France* 10:
 118, pl. 273, fig. 1.

Crambus Geniculeus STAINTON, 1849, *Syst. Catalogue*: 1.

Crambus suspectellus ZELLER, 1839, *Isis*: 174.

Antennae in male distinctly serrate, in female setaceous, brown underneath, lighter from above with slight dark ringing. Palps on the outer side brown, spotted lighter, from inside paler, whitish. Frons grey-whitish, convex. Protuberance of frons smaller than in other species of the genus *Agriphila* HBN., such as *A. inquinatella* (DEN. & SCHIFF.) or *A. tristella* (DEN. & SCHIFF.), besides it is rounded and not shaped as a pointed cone as in the latter species. Head, patagia, thorax and tegulae variable in colour from whitish-grey to yellow brown. Length of the fore wing varies from 9 to 10,8 mm, width from 3,2 to 4 mm. Costal margin in male slightly, in female distinctly convex. Apex slightly pointed, in male less, in female more so. Outer margin in male almost straight, in female rather oblique. Ground of the fore wing dull, brown-grey to light yellowish-brownish (the specimens from Southern Europe are generally paler than those from Central and Northern Europe). Outer band relatively sharply outlined, brown, bordered with white on outside. In its upper part it is strongly bent towards the outer margin, above dorsal margin almost vertical to the former. Inner band rather blurred, visibly more oblique than the outer one, below the costal margin reduced. In middle of wing this band thickens, which makes the impression of a dark spot. Several dark dots on the outer margin, little contrasting with ground. Cilia on the outer

margin with strong metallic lustre, golden-brown. Hind wings grey to yellowish-brownish, with somewhat paler cilia.

subsp. *andalusiella* (CARADJA, 1910)

Crambus geniculeus var. *andalusiellus* CARADJA, 1910, Dtsch Ent., Zt. Iris 24: 109.

Small specimens, with light-yellow fore wings without design. From Granada, Alfacar and Cuenca.

Male genitalia [pl. XXXIV, fig. 5]: uncus pointed, gnathos with a club-like, rounded thickening at the end. Saccus oval. Pars basalis finger-like, of various length, reaches at least the half of the length of valva. It is not much more sclerotized than the rest of valva. Valva very variable in shape, rounded or somewhat pointed at the end. Aedeagus relatively wide. The ventral terminating thorn sometimes strongly or completely reduced. Cornuti large, bent, about 8 in number.

In the female genitalia [pl. LII, fig. 5] gonapophyses anteriores reduced. The connection of ostium bursae with lamella subgenitalis weak, membranous. Ostium bursae not wider than ductus bursae, distinctly more sclerotized. Ductus bursae wide, somewhat more sclerotized than bursa copulatrix, on its surface longitudinally ribbed. Bursa copulatrix transparent, with one small star-like signum.

An Euro-Siberian species known from Western Europe to Japan. In Europe it occurs in dry submontane regions and lowlands. It appears from July to October.

Examined material:

France: 10 males and females: „Courthézon près Orange Vaucluse 12—20 IX 1950, coll. Ch. FISCHER“, author's coll. 1 female: „Baldersheim près Mulhouse Ht.-Rhin, 30 VII 1953, Ch. FISCHER“, author's coll.

Germany: 2 males and 1 female: „Süd-Pfalz Geilweilerhof, 23 VIII 1950, leg. DE LATTIN“, author's coll.

Italy: 4 males and 2 females: „Emilia Bologna, 3—16 IX 1931—1933, A. FIORI“, author's coll. 7 males: „Roma Frascati, VII—VIII“, author's coll.

Corsica: 2 males: „Corse col de Sévi, 7 IX 1936“, author's coll.

Sardinia: 2 males: „Teulada 10 XI 1934, PREDOTA“, author's coll.

USSR: 2 males: „Moskalówka Kosów (Pokucie) 15 VIII 1935“, coll.

TOLL.

Poland: 4 spec.: „Silesia“ [Opole], coll. I. Z. P. A. S., Warszawa. 2 males: „Oświęcim, 3 VIII 1937“, coll. TOLL. 4 spec. from Poznań, coll.

I. Z. P. A. S., Warszawa. 2 males and 1 female: „Ustroń p. Cieszyn, 3—7 VIII 1939, S. TOLL. leg.“, author's coll. 2 males from Mszana Dolna, distr. Limanowa, 9 VIII 1950, author's coll. 4 males: „Krynica, VIII 1950, leg. A. GAJ“, author's coll. 2 males and 1 female: „Bielinek n. Odra, VIII“, author's coll.

***Agriphila tolli* (BLESZYŃSKI, 1952)**

[pl. XXXIV, fig. 3, pl. LXXV, fig. 5]

Crambus tolli BLESZYŃSKI, 1952, Zeit. Wien. Ent. Ges. 37: 149, pl. 16, fig. 2, 5.

Antennae grey, distinctly ringed paler, in male serrate from below. Palps grey-brown, very finely spotted lighter, from inside paler whitish. Frons whitish, slightly convex without conical protuberance. Head whitish. Patagia and tegulae brown and spotted whitish. Thorax dirty whitish. Length of the fore wing 10 mm, the width 3,3 mm. Ground of the fore wing brownish-grey in middle of wing paler, whitish. Outer band similar to that of *A. geniculea* (HAW.), bend of its upper part a little less than in *A. geniculea* (HAW.). Inner band also similar as in *A. geniculea* (HAW.). Dark dots at outer margin well developed. Cilia on the outer margin with distinct metallic lustre, greyish-golden. Hind wings almost dull, light grey. Cilia of the hind wings white.

This species is externally similar to *A. geniculea* (HAW.). The fore wing relatively wider than that of *A. geniculea* (HAW.). Cilia of somewhat different coloration than in *A. geniculea* (HAW.), greyish-golden while it is golden or brown-golden in *A. geniculea* (HAW.).

Male genitalia [pl. XXXIV, fig. 3] are very similar to that of the previous species, but having very important and distinct specific feature in cornuti. In *A. geniculea* (HAW.) there are less cornuti than in *A. tolli* (BLESZ.), viz. 6—8, while in *A. tolli* (BLESZ.) there are ca 20 cornuti. Cornuti of *A. geniculea* (HAW.) are thick, a little curved, while in *A. tolli* (BLESZ.) they are longer than those of *A. geniculea* (HAW.), straight, sharply pointed. The remaining parts of the copulatory apparatus extremely similar to those of *A. geniculea* (HAW.).

The differences in the coloration of the ringing of antennae,

which I mentioned in the description of *A. tolli* (BLESZ.) (1952) are variable as was shown by the investigation of a larger material of specimens of the species belonging to the group *A. geniculea* (HAW.).

Thus far *A. tolli* (BLESZ.) is known only from Dalmatia.

Examined material:

Dalmatia: 3 males (holotype and two paratypes): „Ragusa Dalmatia, 15—30 IX 1930, leg. H. G. AMSEL“, author's coll. and coll. Hungarian National Museum in Budapest.

***Agriphila dalmatinella* (HAMPSON, 1900)**

[Pl. XXXIV, fig. 1, pl. LII, fig. 6, pl. LXXV, fig. 4]

Crambus dalmatinellus HAMPSON, 1900, Trans. Ent. Soc.: 369.

Crambus geniculeus subsp. *dalmatinellus* AMSEL, 1951, Zeit. Lepidopt.

1: 161, pl. 6, fig. 749.

? *Crambus inquatellus* auct. partim.

Antennae pale yellow, distinctly ringed yellow. Palps pale yellow and finely spotted brown. Frons and head yellow. Frons slightly convex, rounded. Patagia and tegulae yellow, finely brown spotted. Thorax yellow. Length of the fore wing ca 9 mm, width ca 3,5 mm. Costal margin slightly convex, apex rather rounded, outer margin slightly oblique. Ground of the fore wing pale yellow, similar as in *A. inquatella* (DEN. & SCHIFF.), with brown darkenings. Outer band similar to that of previous species. Inner band visibly less oblique than in *A. geniculea* (HAW.) and *A. tolli* (BLESZ.), a little wider than in those species. In the middle of the wing it has a little widening of the shape of a spot similarly as in *A. inquatella* (DEN. & SCHIFF.) and previous two species. Ground above dorsal margin suffused with brown scales. Cilia on the outer margin brown-golden with visible metallic lustre, which is, however, a little slighter than in *A. geniculea* (HAW.) and *A. tolli* (BLESZ.). Hind wings almost dull, brownish-greyish. Cilia of the hind wings creamy.

This species is externally similar to *A. inquatella* (DEN. & SCHIFF.) but easily distinguishable from it by the lack of the conical protuberance on the frons which is very distinctly developed in *A. inquatella* (DEN. & SCHIFF.). It is easily

distinguishable from *A. geniculea* (HAW.) and *A. tolli* (BLESZ.) by yellow coloration of the fore wings and less oblique inner band of the fore wing.

Male genitalia [pl. XXXIV, fig. 1] in general have a similar structure as in the two previous species they have, however, very distinct specific features. Uncus and gnathos similar as in two previous species, but somewhat more slender. Pars basalis longer than in *A. geniculea* (HAW.) and *A. tolli* (BLESZ.). It reaches to the end of valva, while in the two previous species it ends visibly before the end of valva. It is accreted to valva on a visibly longer distance than in *A. geniculea* (HAW.) and *A. tolli* (BLESZ.). Aedeagus straight, as long as the whole copulatory apparatus, with small ventral apical thorn. About 12 cornuti of various size, straight, visibly shorter and relatively wider than those of *A. geniculea* (HAW.) and *A. tolli* (BLESZ.). I did not investigate the typical female of species in question. I give only the drawing of the genitalia of a female of *A. dalmatinella* subsp. *bayeri* BLESZ. from Mosul.

Thus far I found sure locations of typical *A. dalmatinella* (HMPS.) only from the Balkans. *A. dalmatinella* subsp. *bayeri* BLESZ. from Syria (Mosul) differs in copulatory apparatus from the typical form of this species.

Examined material:

Holotype and 1 paratype from Lissa, coll. Zoological Museum of the Humboldt University, Berlin. 4 male spec.: „Ochrida (Mazedonien) 9—29 IX, leg. R. WOLFSCHLÄGER“, coll. TOLL, and author's coll. 1 male spec. from Mostar (Herzegowina), coll. AMSEL, Buchenberg.

Genus *Catoptria* HÜBNER, 1825

Typus generis: *Crambus permutatellus* HERRICH-SCHÄFFER, 1849

Crambus FABRICIUS, 1798, Supplementum Entomologiae Systematicae (partim).

Chilo GERMAR, & ZINCKEN, 1817, Magazin für Entomologie (partim).

Catoptria HÜBNER, 1825, Verzeichniss bekannter Schmettlinge.

The most numerous genus of the generic group *Crambus* F. s. l. Male genitalia are characteristic by a much stronger sclerotization than those of the species of *Agriphila* HBN. We find here a great variety of forms in contrary to the slightly

differentiated genitalia of *Agriphila* HBN. -species. Pars basalis always well developed, variously shaped; as folds, prongs or hooks. With few exceptions only, the second, lateral process on valva is present. This finger-like process is formed by the membrana valvae interna which is stronger sclerotized than membrana valvae externa. Sometimes on pars basalis there is an additional process as in *Catoptria coulourella* (DUP.) or *C. fulgidella* (HBN.). Uncus generally pointed, gnathos with triangular widening or small hook at the end. Aedeagus armed sometimes with a hook. Cornuti present or absent. The characteristic feature of females is the strong accretion of lamella subgenitalis with ostium bursae. Sometimes ostium bursae is fused with lamella subgenitalis. This conjunction therefore is of another kind than in species of the genus *Agriphila* HBN. in which it was formed by an additional plate between lamella subgenitalis and ostium bursae. Female genitalia, as well as the male ones, show a great variety of forms. In many cases lamella subgenitalis is very strongly developed and presents something like a box, opened from two sides as in the species of the group *Catoptria permutatella* (H.-S.). Ductus bursae generally strongly sclerotized. On bursa copulatrix with exception of *C. staudingeri* (ZELL.) always one, small, star-like signum.

In the design of the fore wings in the species of *Catoptria* HBN. there appear generally similar elements. Those are white spots placed linearly. They form the basal stripe which is thus broken into several components. Often, however, this stripe is uniform. There appear one, two, or three, of these spots. The longest is the first one which I call the proper basal stripe. The second spot is oval or trapeziform. The third spot occurs as a slightly oblique streak which tends in some cases to elongate in the direction of costa and dorsum and in result to transform into the outer band. The outer band appears besides these cases only in a few species of the genus in question. The inner band is always absent, while it appears very often in the species of *Agriphila* HBN. Fore wings unicolour without any design appear only in *Catoptria languidella* (ZELL.) and *C. laevigatella* (LED.).

In the species of the genus *Catoptria* HBN. we find the

most complicated relations between the design of the wings and the structure of genitalia in the whole generic group *Crambus* F. s. l. The first groups of species are delusively similar to each other or very slightly differing in the coloration and design of the wings but having very great differences in their genitalia; on the other hand we have examples of species with quite identical genitalia but differing considerably in the external habitus. Some types of the design are repeated in various groups; e. g. the wings with uniform, long white basal stripe appear in the species belonging to such groups as *Catoptria radiella* (HBN.), *C. fulgidella* (HBN.), *C. margaritella* (DEN. & SCHIFF.), *C. permutatella* (H.-S.) or *C. furcatella* (ZETT.). In some cases these species are easily distinguishable from each other but sometimes they are extremely similar to each other as for example *Catoptria margaritella* (DEN. & SCHIFF.), *C. pyramidella* (TREITSCH.), and *C. spatulella* (TETL.). Within the groups the different types of design are met with, too; e. g. the basal stripe consisting of two linearly placed spots — such design appears in some species of the group *Catoptria radiella* (HBN.) and also in the species of the group *C. pinella* (L.), and *C. permiaca* (PET.). (It should be mentioned that in the two last groups the species with uniform long basal stripe are not met with). I think that the relation between these species is rather slight. The strong similarity of the design with great differences in the structure of the genitalia in the species of the group *Catoptria permutatella* (H.-S.) should be treated quite differently. In spite of great specific differences in the genitalia of these species they are closely related to each other because in their genitalia several identically developed group features are repeated. The reverse examples are to be observed in the groups *Catoptria pinella* (L.), and *C. mytilella* (HBN.). In the species of these groups the genitalia are delusively similar to each other while great differences occur in the design and coloration of the wings. I do not describe these examples in detail because a thorough discussion of them will be placed in the characterisation of the individual groups.

The genus *Catoptria* HBN. as opposed to *Agriphila* HBN. comprises rather montane species. The significant and characteristic feature of these species is their local distribution.

We find among them many endemics characteristic to separate mountain ridges. The greatest part of the European species of the genus *Catoptria* HBN. is thus far known endemic for Europe, similar conditions occur in the Asiatic regions. The lowland group of *Catoptria* HBN. consists of the species *Catoptria falsella* (DEN. & SCHIFF.), *C. staudingeri* (ZELL.), *C. confusella* (STGR.), and *C. verella* (GERM. & ZINCK.); this group is rather distinct from the typical forms of *Catoptria* HBN. Beside the species mentioned here only a few *Catoptria* HBN. are typically lowland-forms; e. g. *Catoptria fulgidella* (HBN.), *C. pinella* (L.), *C. margaritella* (DEN. & SCHIFF.) or *C. osthelderi* (DE LATTIN). All others are exclusively montane species or mountain elements occurring also in the submontane regions or in the lowlands as for example *Catoptria permutatella* (H.-S.), or *C. lythargyrella* (HBN.). It should be mentioned that generally in the generic group *Crambus* F. s. l. we find the montanic elements almost exclusively among the species of the genus *Catoptria* HBN. Besides them only a few species as *Crambus rostellus* LAH., *Pediasia pedriolella* (DUP.) and *Thisanotia lucella* (H.-S.) occur in Europe only in the mountain regions. The vertical distribution of some species depends on the geographical latitude. A typical example is *Catoptria lythargyrella* (HBN.). In Central Europe this species is a typical lowland element while in the Balkans it reaches 2000 m and in France, according to LHOMME (1935), it occurs generally in the mountains. Probably this type of distribution depends on climatic conditions. I cannot say at present anything definite about the vertical distribution of the species of *Catoptria* HBN. in the Palaearctic region. Without an investigation of genitalia of extensive materials from all parts of the world it is also impossible to establish the geographical distribution of the whole genus *Catoptria* HBN. Nevertheless I have already some data concerning this. As far as the Palaearctic regions are concerned, North Africa possesses only a few species of the genus in question. As I know there appear only three species of *Catoptria* HBN. from which only one *C. margaritella* (DEN. & SCHIFF.) is common for Africa and Europe. It should be mentioned here that it is not known whether the African form *C. margaritella* subsp. *algeriensis* (LUCAS) is only a race

of the European *C. margaritella* (DEN. & SCHIFF.) or a separate species. This problem can be solved only after the investigation of the genitalia of the African form. In South-Western Asia the *Catoptria* HBN.-species are more abundant; those are generally montane elements and belong to the groups *Catoptria mytilella* (HBN.), *C. confusella* (STGR.) from Section I and to the groups of Section II of *Catoptria* HBN.

I divide the genus *Catoptria* HBN. into two sections. The first of them, more numerous, comprises the species in which except a few cases the strongly sclerotized lateral process on the inner side of valva is developed. Saccus in these species is not very much elongated. The species belonging to the second, less numerous section are characteristic by the lack of the lateral process of valva and by a very elongated saccus.

Section A

GROUP 1

Group type: *Catoptria radiella* (HBN.)

Five species belong here, strongly related to each other, with similar genital structure: *Catoptria radiella* (HBN.), *C. intermediella* (M.-R.), *C. bolivari* (AGENJO), *C. conchella* (DEN. & SCHIFF.) and *C. pauperella* (TREITSCH.). They are characteristic by the development of pars basalis in the male genitalia as a hook reaching at most to the half length of valva. The second (lateral) process on valva is strongly developed, club-like, situated laterally near the base of valva. In the female genitalia ostium bursae is tube-like. These species form two distinct sub-groups. The first comprises the first three species. On the fore wings there appears a uniform long basal stripe. In male genitalia of these species pars basalis is somewhat more weakly developed than in those belonging to the second sub-group. The second sub-group comprises two species: *C. conchella* (DEN. & SCHIFF.) and *C. pauperella* (TREITSCH.). The basal stripe in them is broken into two parts.

In the male genitalia of these species pars basalis is relatively better developed than in the species of the first sub-group. The species belonging to both sub-groups are very similar to each other in wing design.

The interesting geographical distribution of some species of the group in question should also be discussed shortly here. They are all montane elements and except *C. bolivari* (AGENJO) occur in the Alps. *C. bolivari* (AGENJO) is a Pyrenean endemic replacing there *C. radiella* (HBN.). *C. radiella* (HBN.) and *C. intermediella* (M.-R.) are also vicarious species in the Alpine region. *C. radiella* (HBN.) appears mainly in the Swiss Alps while *C. intermediella* (M.-R.) is distributed in Alpes Maritimes, Basses Alpes and the Apennines. Moreover, *C. radiella* (HBN.) appears also in the Tatry Mts. Because of the lack of this species in East Carpathian Mts. and in Sudety Mts. it is possible to suppose that it came to the Tatry through Moravian hills and Small Fatra. As far as the species of the second group are concerned, *C. conchella* (DEN. & SCHIFF.) except in the Alps occurs in the Vosges Mts. *C. pauperella* (TREITSCH.) is confined to the Jura Mts., it occurs also in East Carpathian Mts., Transsylvania and Transylvanian Alps, while in the Tatry Mts. and the Sudety Mts. this species is absent. Therefore this species wandered from the Alps by the South route and came to the East Carpathian Mts. „by detour“. It either did not reach the Tatry Mts. or was expelled by the glaciers in the ice age which is quite possible for, as its distribution in the Alps shows, it is a more thermophilous species than *C. radiella* (HBN.)

Catoptria radiella (HÜBNER, 1810—1813)

[Pl. XXXV, fig. 1—2, pl. LIII, fig. 1, pl. LXXVI, fig. 1—3]

Tinea radiella HÜBNER, 1810—1813, Samml. Eur. Schmett. pl. 47, fig. 325.

Chilo Radiellus GERMAR & ZINCKEN, 1817, Mag. Entomolog., 2: 83, fig. 32.

Eucarphia Radialis HÜBNER, 1825, Verz. Bek. Schmett.: 364.

Crambus fulgidellus DUPONCHEL, (nec HÜBNER) 1836, Hist. Nat. Lép. France, 10: 98, pl. 272, fig. 2.

Crambus Radiellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 65.

Crambus tristrigellus RAGONOT, 1875, Bull. Soc. ent. Fr.: LXXXI.

Antennae brown, in male serrate, in female setaceous. Palps olive-brown, whitish at the base. Frons convex, smooth, whitish. Head whitish. Patagia and tegulae olive-brown. Length of the fore wing varies from 10,5 to 11,5 mm, width from 3,5 to 4,2 mm. Fore wing lustrous, olive-brown. Basal stripe white, rather narrow, very delicately widening toward outer margin, slightly narrowed at the end. This stripe is smooth from above and very delicately torn from below. It reaches almost to end of wing but its end is still visibly remote from the outer margin. Costal margin at wing base very slightly bent outwards, further on straight. Apex slightly rounded, in female more pointed. Outer margin in male slightly oblique, in female more so, almost straight. Ground above basal stripe more or less strongly darkened brown. Between basal stripe and inner margin a more or less contrasting white streak. A similar streak lies on the inner margin at wing base. No dark dots at the outer margin. Cilia on the outer margin with slight lustre, brownish, with darker basal streak, several times interrupted by white. Hind wings dark, brown-grey with very slight lustre. Cilia of the hind wings white or whitish, sometimes with darker basal streak.

subsp. *tatricella* (BLESZ., 1956) [pl. XXXV, fig. 2, pl. LXXVI, fig. 2—3].

Crambus radiellus subsp. *tatricellus* BLESZYŃSKI, 1956, Pol. Pis. Ent. 25: 126, figs.

Head snow-white, patagia brown at sides, white in the middle. Thorax white. Cilia of fore wings strongly lightened to white on outer margin. The specimens from Tatry Mts. differ distinctly in coloration from the typical form; I did not find specimens with typical coloration in Tatry Mts. in spite of several years of observation.

Male genitalia [pl. XXXV, fig. 1—2]: uncus wide, pointed. Gnathos as long as uncus terminated with a triangular sharp widening. Pars basalis short, of variable length, separated from valva very near its base. The second (lateral) process

developed also near the base of valva. It has the shape of a club, somewhat wider near the end than at its base, and rounded. It is much longer than pars basalis. Valva rather pointed near the end. Aedeagus almost as long as the whole copulatory apparatus, narrow. Inside there are numerous very small cornuti, visible only under rather high microscopic enlargement.

In female genitalia [pl. LIII, fig. 1] lamella subgenitalis narrow, in its ventral part distinctly wider than in the dorsal one, strongly accreted to ostium bursae. Gonapophyses anteriores strongly reduced, developed as wide sharply ended triangles. Ostium bursae tube-like. Between ostium bursae and ductus bursae the sclerotization is continuous. Ductus bursae strongly sclerotized to the half of its length, longitudinally ribbed. From the half of its length ductus bursae almost transparent, similarly as bursa copulatrix. On bursa copulatrix there is one star-like signum.

Catoptria radiella (HBN.) is an European endemic, and a species confined exclusively to the mountains. It occurs in the Alps and Tatry Mts. from June to September. It flies from ca 1000 m upwards.

C. radiella (HBN.) shows a great similarity to the closely related *C. intermediella* (M.-R.). It differs from this species by distinct lustre of the fore wings, which feature is completely absent in *C. intermediella* (M.-R.). It differs from the also very similar Pyrenean endemic *C. bolivari* (AGENJO) by its size and coloration. *C. bolivari* (AGENJO) is distinctly bigger than *C. radiella* (HBN.) and more light-coloured. Besides, these species may be easily distinguished by their location for *C. bolivari* (AGENJO) does not occur in the Alps and *C. radiella* (HBN.) in the Pyrenees. They are vicarious species. *C. radiella* (HBN.) is also slightly similar to *C. furcatella* (ZETT.) from which it differs, however, by its coloration. *C. furcatella* (ZETT.) has the fore wings dull, brown-red. In *C. fulgidella* (HBN.), a lowland species similar in fore wing design, the basal stripe reaches the outer margin, while in *C. radiella* (HBN.) it is distinctly remote from the outer margin.

RAGONOT (1875) described „a new species“ *Crambus tristrigellus* RAG. which was later on recognized as an aberration.

tion of *C. radiella* (HBN.). In that, beside the basal stripe on the fore wing, there appear two additional white streaks. Despite the fact that in HÜBNER's drawing *Tinea radiella* HBN. has no such streaks I treat the name *tristrigellus* RAG. as a synonym of the typical form and I think that the additional white streaks were probably neglected in HÜBNER's drawing. I think that the form with strongly developed additional streaks does not deserve separation because between the specimens with well developed streaks and the ones without them there are all possible intermediate forms. These streaks are, I think, a very typical feature for *C. radiella* (HBN.) and appear in almost all specimens of this species. Among my 97 specimens of *C. radiella* subsp. *tatricella* (BLESZ.) and about 50 specimens of the Alpine typical form examined by me I found no specimen which would not have the white additional streaks, at least slightly visible. MÜLLER-RUTZ in his work on the group *C. radiella* (HBN.) (1933) writes that amongst his 53 specimens of *C. radiella* (HBN.) only 6 have no additional streaks. According to MÜLLER-RUTZ, RAGONOT described the „new species“ *Crambus tristrigellus* Rag. since he judged it from DUPONCHEL's drawing. This drawing shows distinctly the species *C. intermediella* (M.-R.) while the inscription under the one showing a real *C. radiella* (HBN.) is „*Crambus fulgidellus*“.

Examined material:

Alps: 1 male: „Tirol Ötztal Rosenberg, 2600 m, 8—10 VIII 1942, J. KLIMESCH“, author's coll. 2 males: „Tirol Stubai, 2500 m, Hoher Burgstall, 16 VIII 1941, J. KLIMESCH“, author's coll. 1 male: „Carinthia, 2300 m, Gr. Glockner Guttal, VIII 1943, J. KLIMESCH“, author's coll. 1 male: „Allgäuer Alpen Gemstetal b. Mittelberg, ca 1500 m, 27 VII 1950, leg. DE LATTIN“, author's coll. 8 males and females: „17 VII 1949—1950, Kärnten Sanalpe, 1700 m, THURNER leg.“, author's coll. 4 spec.: „Wailis Berisal“, coll. I. Z. P. A. S., Warszawa. 3 spec.: „Engadin Semadeni“, coll., I. Z. P. A. S. Warszawa. 1 male: „Piemonte Biella Alta Val Cervo, VII 1938, A. FIORI“, author's coll. 3 males: „Trentino Mandou, 10 VIII 1946, A. FIORI“, author's coll. 1 male: „Trentino Bedale, 24 VII 1946, A. FIORI“, author's coll.

Tatry Mts. [subsp. *tatricellus* (BLESZ.)]: 32 males and females: „Polonia mer. Tatry Mts. Hala Gasienicowa, 1500 m, 7 VII — 15 VII 1948—1953 leg. BLESZYŃSKI“, author's coll. 27 males and females: „Tatry Suchy Kondracki, 26 VII 1946, BLESZYŃSKI“, author's coll. 15 males and females:

„Tatry Mts. Mała Świnica, 1300 m, 22 VI 1950, leg. BŁESZYŃSKI“, author's, coll. 23 males and females: „Tatry Hala Ornak 1100 m, VII 1949—1950, BŁESZYŃSKI“, author's coll.

***Catoptria intermediella* (MÜLLER-RUTZ, 1920)**

[Pl. XXXV, fig. 3, pl. LIII, fig. 2, pl. LXXVI, fig. 4]

Crambus radiellus DUPONCHEL, (nec HÜBNER) 1836, Hist. Nat. Lép. France 10: 100, pl. 272, fig. 1.

Crambus intermediellus MÜLLER-RUTZ, 1920, Mitt. Ent. Zürich 5: 334.

Antennae brown, in male slightly serrate, in female setaceous. Palps brown, from the inner side a little whitish. Frons convex, rounded, brown. Head brown. Patagia, thorax, and tegulae olive-brownish. Length of the fore wing 10,5 mm, width 4,2 mm. Fore wing relatively shorter and wider than in *C. radiella* (HBN.) and its shape rather resembling that of *C. furcatella* (ZETT.). Costal margin very slightly convex, apex slightly rounded, rather somewhat pointed, outer margin slightly oblique, delicately bent outwards. Fore wing with slight lustre; almost dull; this lustre is considerably weaker than in *C. radiella* (HBN.). Ground of the fore wing olive-brownish. Basal stripe not pure white, as in *C. radiella* (HBN.), but creamy white. This stripe is in its shape similar to that of *C. radiella* (HBN.). MÜLLER-RUTZ (1933) writes in his diagnosis for *C. intermediella* (M.-R.) that this stripe is slightly bifurcated, similarly as in *C. furcatella* (ZETT.). Investigating a series of specimens from the Basses Alpes and Apennines, that is the regions from which *C. intermediella* (M.-R.) was described, I found that the basal stripe of this species is only slightly torn from below, similarly as in *C. radiella* (HBN.). It is possible that the specimens from which MÜLLER-RUTZ described the species in question were somewhat different from mine. Dorsal margin at the base of the wing slightly paler, considerably less, however, than in *C. radiella* (HBN.). The white line which appears normally in *C. radiella* (HBN.) between dorsum and basal stripe, in *C. intermediella* (M.-R.) is almost completely reduced. Cilia on the outer margin with delicate lustre, coloured similarly as ground of wing, interrupted several times by white cuts.

Hind wings brownish-grey, dull. Cilia of the hind wings dirty-whitish, with dark basal streak.

C. intermediella (M.-R.) is very similar to *C. radiella* (HBN.) and *C. bolivari* (AGENJO) but is easily distinguishable, for *C. intermediella* (M.-R.) is of much more squat structure, smaller, with distinctly weaker lustre of the wings.

Male genitalia [pl. XXXV, fig. 3] delusively similar to that of the species *C. radiella* (HBN.). Pars basalis somewhat wider and the lateral process on valva somewhat narrower than that of *C. radiella* (HBN.). However, for the time being, I do not consider these features as taxonomically important, for I investigated too small a number of specimens of the species in question to be able to establish a reliable opinion about the variability of its genitalia. Aedeagus similar as in *C. radiella* (HBN.) narrow, straight, unarmed, with numerous, extremely fine cornuti inside.

Female genitalia [pl. LIII, fig. 2] similarly as the male ones, delusively similar as in *C. radiella* (HBN.).

Despite no well defined genital differences between *C. radiella* (HBN.) and *C. intermediella* (M.-R.) I consider these two moths as different species for in such case the external features are decisive [similarly as in such species as for example: *C. corsicella* (DUP.) and *C. pinella* (L.) or *C. mytilella* (HBN.) and *C. aetnella* (ZERNY)].

In the work of DUPONCHEL (1836) [pl. 272, fig. 1] we find a drawing in colour showing almost undoubtedly *C. intermediella* (M.-R.). This species was named by the author of that work „*Crambus radiellus*“. It is undoubtedly a mistake resulting of confusing by DUPONCHEL the species *C. radiella* (HBN.) and *C. fulgidella* (HBN.). A typical *C. radiella* (HBN.) was painted in this work as „*Crambus fulgidellus*“. Because of the false drawing of *C. radiella* (HBN.) by DUPONCHEL this species was described by RAGONOT (1875) as „*Crambus tristrigellus*“.

C. intermediella (M.-R.) is thus far a species little known and not distinguished from *C. radiella* (HBN.). I myself have received from various places specimens of *C. intermediella* (M.-R.) determined as *C. radiella* (HBN.). I think therefore, that the data concerning *C. radiella* (HBN.) in many publi-

cations should be considered as concerning *C. intermediella* (M.-R.).

Examined material:

Several males and females: „Alpes Maritimes St. Martin Vesubie“, „Madonna di Finestre. SCHMIDT“, coll. Museum of the Natural History in Budapest. and author's coll.

***Catoptria bolivari* (AGENJO, 1947)**

[Pl. XXXV, fig. 5, pl. LIII, fig. 3, pl. LXXVI, fig. 5]

Crambus bolivari AGENJO, 1947, Eos, Madrid, 23: 9, pl. 1, fig. 5—10, 12.

Antennae whitish from above, brown from below, serrate in male, setaceous in female. Palps at sides from the outer side brown, from inner side and above whitish. Frons white, slightly convex, rounded. Head whitish. Patagia lustrous, olive-brown at sides, in the middle whitish. Thorax coloured similarly as patagia. Tegulae lustrous olive-brown. Length of the fore wing 12—14,5 mm, width 4,5 to 5 mm. Costal margin slightly convex, apex slightly rounded, outer margin slightly oblique. Apex in female less rounded, more pointed than in the male; outer margin somewhat more oblique than in the male. Fore wing very lustrous, olive-brown, somewhat lighter-coloured than in the similar *C. radiella* (HBN.). Basal stripe white, somewhat wider than in *C. radiella* (HBN.). This stripe is slightly torn from below; it ends, similarly as in *C. radiella* (HBN.), distinctly before outer margin. Dorsal margin bordered with white at base of wing. A distinct narrow white streak between basal stripe and dorsal margin. Cilia on the outer margin coloured similarly as ground of fore wing, lustrous, four times interrupted by white lines. Three of these interruptions are situated below apex, the fourth on tornus. These cuts generally reach the ground of the wing; this does not occur in *C. radiella* (HBN.). Hind wings with slight lustre, grey, paler than those of *C. radiella* (HBN.). Cilia of hind wings creamy-white.

ab. *uniformis* (AGENJO), 1947, Eos, **23**: 14, pl. 1, fig. 11.

The specimens in which on the fore wing the white streak between basal stripe and dorsal margin, and on the dorsal margin at the wing base, are absent.

Male genitalia [pl. XXXV, fig. 5] larger than in *C. radiella* (HBN.). Uncus and gnathos more slender than in *C. radiella* (HBN.). Pars basalis somewhat longer and forming a greater angle with valva than in *C. radiella* (HBN.). Lateral process on valva narrower and more remote from the base of valva than in *C. radiella* (HBN.). Aedeagus shorter than in *C. radiella* (HBN.), without cornuti while in *C. radiella* (HBN.) there appear numerous very fine cornuti.

In female genitalia [pl. LIII, fig. 3] lamella subgenitalis strongly accreted to ostium bursae. Ostium bursae shorter than in *C. radiella* (HBN.). Whole ductus bursae slightly sclerotized. Bursa copulatrix large, transparent, with one small star-like signum.

C. bolivari (AGENJO) is a species endemic for the Pyrenees and vicarious with the alpine species *C. radiella* (HBN.). Until not long ago this species was not recognized and in L'HOME'S Catalogue (1935) it is reported as *C. radiella* (HBN.). Only MÜLLER-RUTZ (1933) points out that the Pyrenean form is a species different from *C. radiella* (HBN.). He gives even a short diagnosis of this new species, which, however, he does not name. AGENJO in 1947 described this species under the name *Crambus bolivari* AGENJO. All data concerning the appearance of *C. radiella* (HBN.) in the Pyrenees should be therefore referred to *C. bolivari* (AGENJO) for it is very doubtful that *C. radiella* (HBN.) occurs in those regions together with *C. bolivari* (AGENJO).

The species in question is very easily distinguishable from the very related *C. radiella* (HBN.) by much bigger size and lighter coloration of the fore wings.

Examined material:

Pyrenees: 1 male and 1 female: „Ascou le Pujal Axles Thermes Ariège, 6—12 VIII 1950, coll. Ch. FISCHER“, author's coll. 2 males: „Gèdre et environs Ht.-Pyrénées, 15—30 VII 1936, Ch. FISCHER, 10—1500 m“, author's coll. 1 male: „Héas Htes Pyr., 12 VII 1937, G. T. ADKIN“, author's

coll. 2 males: „Le Monné Cauterets H. P., 27 VIII 1951, G. T. ADKIN“, author's coll. 1 male: „Cambasagne Htes Pyr., 19 VII 1936, G. T. ADKIN“, author's coll. 2 females: „Cambasagne Cauterets H. P., 17 VII 1951, G. T. ADKIN“, author's coll.

***Catoptria pauperella* (TREITSCHKE, 1832)**

[Pl. XXXV, fig. 6, pl. LIII, fig. 5, pl. LXXVI, fig. 8]

Chilo Pauperellus TREITSCHKE, 1832, Schmett. Eur. 9: 101.

Crambus Pauperellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 63, Sppl. 136.

Antennae brown, in male serrate from below, in female setaceous. Palps brown from outside, paler from inside, yellowish from above. Frons slightly convex, rounded, greyish-rusty. Head rusty-yellow. Patagia, thorax, and tegulae rusty-yellow. Length of fore wing ca 11,5 mm, width 4,5 mm. Costal margin more or less straight, apex rounded, outer margin somewhat oblique, very slightly bent outwards. In female apex less rounded and the outer margin more oblique than in male. Fore wing dull with yellow-brown ground. In the lower part above dorsum the ground of the wing a little paler than in the upper part below costal margin. Basal stripe once interrupted i. e. consisting of two parts. Proper basal stripe similarly as in related species obliquely truncate near the end, reaching half of wing length. Triangular spot prolonging it with more pointed ends than in *C. conchella* (DEN. & SCHIFF.). Its inner end similar as in *C. conchella* (DEN. & SCHIFF.), pointed toward middle of the outer margin. Basal stripe and spot prolonging it always yellow. In the place where usually the outer band appears, ground of wing usually very slightly lightened. Dark dots at the outer margin usually tend to disappear. Cilia on the outer margin with delicate lustre, dark at the base, brown, their ends white. Only below apex white part of cilia darkened brown. Border between brown and white coloration is sharp. Hind wing dull, dark, greyish-brown. Cilia of hind wing white with dark basal streak.

After investigating a series of specimens from Eastern Carpathians I only found a very slight variability of *C. pauperella* (TREITSCH.).

Male genitalia [pl. XXXV, fig. 6] very similar as in *C. conchella* (DEN. & SCHIFF.). Gnathos terminated with a triangular thickening. Uncus not rounded as in *C. conchella* (DEN. & SCHIFF.), narrower than in that species. Uncus, seen sideways cut obliquely at the end, and from above it is wide, shovel-like. Pars basalis well developed, of the shape of a narrow dagger pointed upwards, in relation to valva at an angle of 45°. Pars basalis of *C. conchella* (DEN. & SCHIFF.) is more detached from valva and is a little bent. The second (lateral) process of valva is situated nearer the base of valva than the point in which pars basalis separates from valva. Valva wider than in *C. conchella* (DEN. & SCHIFF.). Aedeagus, similarly as in *C. conchella* (DEN. & SCHIFF.), shorter than the whole copulatory apparatus, but a little wider than in that species. Aedeagus unarmed and without cornuti.

Female genitalia [pl. LIII, fig. 5] similarly as the male ones, are very similar as in *C. conchella* (DEN. & SCHIFF.). Lamella subgenitalis slightly more widened in its lower part than in *C. conchella* (DEN. & SCHIFF.). The widenings of lamella subgenitalis which may be taken for reduced and widened gonapophyses anteriores are delicately rounded, not sharply terminated as in *C. conchella* (DEN. & SCHIFF.). Ductus bursae tubular, somewhat wider than in *C. conchella* (DEN. & SCHIFF.). Ductus bursae, similarly as in *C. conchella* (DEN. & SCHIFF.), strongly sclerotized only to the half of its length. Bursa copulatrix transparent, its length corresponds to the length of the rest of the copulatory apparatus. One small star-like signum.

Catoptria pauperella (TREITSCH.) is a montane species. It is distributed in the Alps in Jura, Eastern Carpathians, Transsylvania, Transylvanian Alps and Bosnia. In Tatry Mts. it is absent. Therefore one may assume that this species came to Eastern Carpathians through Southern mountain ridges, that is by another way than *C. radiella* (HBN.). In Eastern Carpathians it is known from Czarnohora Mts. and Gorgany Mts., not found thus far in Bieszczady Mts. but its occurrence there is quite probable. It appears in July.

Examined material:

Eastern Carpathians: 1 male: „Czarnohora, 1400 m, Stok Dancerza, 26 VII 1934, E. ŚWIDERSKI“, author's coll. 1 male and 1 female: „Czarno-

hora Kocioł Breskufa, 19 VII 1936 [and] 21 VII 1935, E. ŚWIDERSKI“, author's coll. 2 males and 1 female: „Czarnohora Foreszezenka, 2—12 VII, St. STACH“, author's coll. 2 males: „Worochta (Rebruweu), 26 V. II, STÖCKL“, author's coll. 2 males: „Gorgany Rafałowa, VII 1939, Dr. STEFANOWSKI, author's coll.

***Catoptria conchella* (DENIS & SCHIFFERMÜLLER, 1775)**

[Pl. XXXV, fig. 4, pl. LIII, fig. 4, pl. LXXVI, fig. 6—7]

Tinea Conchella DENIS & SCHIFFERMÜLLER, 1775, Syst. Verz. Schmett. Wien. Geg.: 134.

? *Crambus conchaeus* FABRICIUS, 1798, Suppl. Entomol. Syst.: 472.

Chilo Stenziellus TREITSCHKE, 1835, Schmett. Eur. 10: 167.

Crambus Conchellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 63, Sppl. 1.

Crambus conchellus ? var. *Rhombellus* ZELLER, 1863, Chil. Cramb. Gen. Spec.: 29.

Antennae brown, in male serrate from below, in female setaceous. Palps yellowish from above, brown outside, whitish inside. Frons slightly convex, rounded, smooth, whitish or yellowish. Head coloured similarly as frons. Patagia brown-yellow, whitish in the middle. Tegulae brown-yellow. Thorax whitish. Length of fore wing varies from 9 to 12 mm, width from 3,5 to 5 mm. Fore wings in female narrower than in male, with more pointed apex and more oblique outer margin. Wings generally dull, with brown ground, anterior part yellowish. Basal stripe snow-white. It reaches to half of the wing length and is strongly obliquely cut at the end. It is distinctly more remote from dorsal margin than from costal margin. In prolongation of basal stripe a big spot similarly coloured as basal stripe. This design, consisting of white stripe and oval spot is similar as in *C. pinella* (L.) or *C. permiaca* (PET.). For this reason these species are sometimes erroneously determined. They are, however, very easily distinguishable by the shape of the white oval spot. In *C. pinella* (L.) and *C. permiaca* (PET.) the outer end of spot pointed above middle of wing width. Again in *C. conchella* (DEN. & SCHIFF.), end of spot pointed more or less to middle of the outer margin. Between the oval spot and the outer margin in *C. conchella* (DEN. & SCHIFF.) there is never a trace of a white oblique line, similarly as in

C. pinella (L.). Several dark dots at the outer margin. Cilia on the outer margin lustrous, greyish, darker at the base than at the end, in the upper part of wing whitish at the end. Hind wings with delicate lustre, brownish-grey, in the middle more or less paler. Cilia of the hind wings dirty whitish, with dark streak of basal scales.

ab. *pseudopauperella* (ZERNY, 1914)

Crambus pauperellus DUPONCHEL, 1836, (nec TREITSCHKE), Hist. Nat. Lép. France **10**: 94, pl. 271, fig. 4.

Crambus conchellus subsp. *pseudopauperellus* ZERNY, 1914, Ann. Hofmus. Wien **28**: 301.

This form is usually regarded as a subspecies, however, it is probably only an aberration of *C. conchella* (DEN. & SCHIFF.). In the ab. *pseudopauperella* (ZERNY) the basal and the prolonging spots are yellow similarly as in *Catoptria pauperella* (TREITSCH.). I think that it is a form sporadically occurring among typical specimens which does not deserve the name of subspecies. I have a specimen of this form from France bearing a label identical with these of several other typical specimens of *C. conchella* (DEN. & SCHIFF.) and therefore most probably collected together with them, which corroborates my assumption. I know no transitory specimens to the typical form.

Male genitalia [pl. XXXV, fig. 4]: uncus relatively wide, at the end wider than in *Catoptria radiella* (HBN.), rounded. Gnathos as long as uncus, with triangular widening at the end. Pars basalis narrow, as long as in *Catoptria pauperella* (TREITSCH.), slightly curved. Second process on valva distinctly shorter than pars basalis. Aedeagus straight, distinctly shorter than the whole copulatory apparatus. Cornuti absent.

Female genitalia [pl. LIII, fig. 4] similar as in *Catoptria pauperella* (TREITSCH.). Gonapophyses anteriores pointed. Ductus bursae strongly sclerotized, longitudinally ribbed to the half of its length. Bursa copulatrix large, transparent. One star-like signum.

C. conchella (DEN. & SCHIFF.) is a West European element, confined rather to mountainous regions. It occurs from June to August.

Examined material:

France: 9 males: „Sallanches et environs Ht.-Savoie, 3—25 VI 1950, 10—1400 m, coll. CH. FISCHER“, author's coll. 1 male: „12 VII 1939, Ailefroide Massif Pelvoux, CH. FISCHER“, author's coll. 1 male and 1 female: „23 VII 1946, Schiesrothried pr. Metzeral Ht.-Rhin, alt. 950 m, Ch. FISCHER“, author's coll. 1 male: „Rain Kopf Crête-Vosges Ht.-Rhin, 19 VI 1949, Ch. FISCHER (1300 m)“, author's coll. 1 female: „Gr. Ballon Guebwiller Ht.-Rhin, 16 VII 1949, Ch. FISCHER, alt. 13—1400 m“, author's coll. 1 female: „Alpes Maritimes St. Martin-Vesubie Cascad Boreou, SCHMIDT, 1925 VII 31“, author's coll.

Germany: 4 males: „Rotwand Bayr.-Alpen Wolfsberger, 21 VI 1947“, author's coll. 2 males: „Ammerswald Frieder, 1700—2000 m, 22 VIII 1947, coll. OSTHELDER“, author's coll. 1 male: „Spitzingsee Bayr. Alpen Wolfsberger, 22 VII 1945“, author's coll.

Austria: 6 males: „14 VII 1949, Klagenfurt Karawanken Kärnten, 1700 m“, author's coll. 2 males: „Tirol Mühlauer Kamm, 800 m, 8 VII 1939, author's coll. 1 female spec.: „Tirol Lechtal v. Hornbath, 1000 m, 24 VI 1947“, author's coll.

Switzerland: 1 male „Arosa“, author's coll. 1 female: „Davos Suisse“, author's coll. 1 female: „Ob. Engadin, 2 VII 1885“, author's coll. 6 spec. from Albula Bergün, coll. I. Z. P. A. S., Warszawa., 5 spec. from Wallis Berisal, coll. I. Z. P. A. S., Warszawa.

Italy: 1 male: „Trento Lago Ritorto 22 VII 1946, A. FIORI“, author's coll. 1 female: „Piemonte Biella Alta Val Cervo, VIII 1938, A. FIORI“, author's coll.

Poland: 1 male: „Kudowa Zdrój, VII 1952, ŚLIWIŃSKI“, author's coll.

GROUP 2

Group type: *Catoptria permutatella* (H.-S.)

According to the design of the fore wings the species of this group present three distinct types. In the first of these, the most numerous one, are the species in which the basal stripe is interrupted into three white spots: the proper basal stripe reaching to the half of the wing length, a white spot prolonging it, of more or less oval shape, and an oblique streak situated between the oval spot and the outer margin. The species of this type of design, in spite of distinct differences in their genitalia, generally do not show any differences in the design and coloration. The second type comprises only two species, viz. *C. pyramidella* (TREITSCH.) and *C. spatulella*

(TRTL.), which present on the fore wing a long uniform, basal stripe, not interrupted into several parts. This stripe is distinctly wider at its end than at the base. Only one species belongs to the third type of design, viz. *C. acutangulella* (H.-S.). Its fore wings are light-coloured without distinct basal stripe.

As regards the constitution of genitalia, the group *C. permutatella* (H.-S.) is uniform and only rather rare deviations from the typical constitution are known.

In males uncus and gnathos is slender, long. Uncus widened at the end, terminated with a delicate hook. Gnathos also with a widening and small hook at its end. Pars basalis well developed as a large hook distinctly separated and bordered from the valva, and generally curved upwards. The second (lateral) process on valva always well developed. Aedeagus narrow, long, unarmed, and without cornuti. In female genitalia lamella subgenitalis well developed, provided with additional folds. The accretion of lamella subgenitalis to ostium bursae very strong.

Only *C. osthelderi* (DE LATTIN) is somewhat different in its genitalia than the general type. In male genitalia of this species pars basalis is curved downwards, gnathos has a conical prong ventrally. In the female genitalia lamella subgenitalis has a strong dorsal incision, absent in the remaining species of this group.

The species of the group *C. permutatella* (H.-S.) are principally montane ones, one exception being *C. osthelderi* (DE LATTIN) which seems to be confined to xerothermic lowland regions. Many of them are very local and confined to separate mountain ridges.

Except the species of the group *C. permutatella* (H.-S.) described below, two more European species were lately discovered by DE LATTIN. However, I do not give their names or descriptions, as these are not yet published.

***Catoptria permutatella* (HERRICH-SCHÄFFER, 1849)**

[Pl. XXXVII, fig. 2, pl. LIV, fig. 1—2, pl. LXXVII, fig. 1—2]

? *Phalaena Pinetella* SCOPOLI, 1763, (nec LINNAEUS), Entomologia Carniolica: 244.

? *Chilo Conchellus* TREITSCHKE, 1832, (nec DENIS & SCHIFFERMÜLLER) Schmett. Eur. 9: 97.

Chilo conchellus ZETTERSTEDT, 1840, (nec DENIS & SCHIFFERMÜLLER), Insecta Lapponica: 994.

Crambus Permutatellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 64, Sppl. 86.

? *Crambus conchellus* DUPONCHEL, 1836, (nec DENIS & SCHIFFERMÜLLER), Hist. Nat. Léop. France 10: 91, pl. 271, fig. 5b.

Crambus uralensis PETERSEN, 1924, Lep. Fauna Estland 2: 387.

Crambus myellus PIERCE & METCALFE, 1938, (nec HÜBNER), Genit. Brit. Pyr. Delt. Plumes: 16, pl. IX.

? *Crambus epimyellus* DE JOANNIS, nom. nov. pro *Crambus myellus* (HBN.).

Crambus myellus auct. p. partim.

Antennae light-brown, in male serrate from below, in female setaceous. Palps brown outside, snow white inside and underneath. Frons slightly convex, smooth, snow white. Head snow-white. Patagia brown on sides, white in the middle. Thorax white. Tegulae brown. Length of fore wing varies from 8,5 to 13 mm, width from 3,7 to 5 mm. Costal margin very slightly convex. Apex slightly rounded, outer margin very slightly bent outwards. Sexual dimorphism in the shape of the wings not visible. Ground of fore wing rusty-brown to brown. Above the dorsal margin ground generally paler. Basal stripe always snow-white, interrupted into three parts. First part of basal stripe reaches to half of wing length, truncate obliquely at the end, distinctly wider than at the base. Spot prolonging stripe has the shape of a rhomb sometimes a little rounded. An oblique streak situated between this spot and outer margin generally does not run parallel to the outer edge of the spot. Below costal margin before apex a small spot of yellowish on brown ground. Several well developed small dark dots at the outer margin. Cilia on the outer margin with distinct lustre, brown, more or less distinctly interrupted whitish several times. Hind wings dull grey, sometimes slightly yellowish at the margins. Cilia of hind wings slightly lustrous, greyish, distinctly lighter-coloured than ground of wing.

C. permutatella (H.-S.) is a species variable in its coloration. For the darkened specimens of this as well as related species DE LATTIN established the collective name *vulpinellus* DE LATTIN (1951). As this is incompatible with nomenclatory rules, the

name *vulpinellus* DE LATTIN should be regarded only as a form of *C. permutatella* (H.-S.). As far as the discussed species is concerned it is difficult to ascertain whether *C. permutatella* ssp. *vulpinella* (DE LATTIN) is a subspecies or only an individual aberration.

subsp. *kaisilai* (DE LATTIN, 1951).

Crambus permutatellus subsp. *kaisilai* DE LATTIN, 1951, Zeit. Wien. Ent. Ges., 36: 98, pl. 6, fig. 7, 8.

A Scandinavian subspecies characteristic by a strong darkening of the ground of fore wings.

ab. *hercyniae* (HEINEMANN, 1854).

Crambus hercyniae HEINEMANN, 1854, Zeit. Bresl. Ent.: 3.

A form with the white rhomboidal spot of fore wing distinctly narrower than usually.

Probably *Crambus myellus* ab. *unimaculellus* BRUNDIN (1931, K. Sven. Vet. Skrift. Natursk. 16: 53) and *Crambus myellus* ab. *approximellus* PREISSECKER (1937, Verh. Zool.-bot. Ges. 86/87: 419) are forms of *Catoptria permutatella* (H.-S.).

Male genitalia [pl. XXXVII, fig. 2]: uncus narrow, widened at the end, terminated by a hook. Gnathos as long as uncus, widened at the end, terminated by a hook curved downwards. Pars basalis of variable shape. Normally it is broad, curved upwards, sharply pointed. Sometimes pars basalis more elongated and narrowed. It reaches from half to about 3/4 the length of valva. Aedeagus visibly shorter than the whole copulatory apparatus, rather straight. Cornuti absent.

Female genitalia [pl. LIV, figs. 1, 2]: ostium bursae strongly accreted to lamella subgenitalis, with edges without a lip which occurs in *Catoptria myella* (HBN.). The upper part of lamella subgenitalis visibly narrower than the lower ones. Ductus bursae strongly sclerotized with longitudinally ribbed surface nearly as far as bursa copulatrix. Bursa copulatrix transparent with one, star-like signum.

AS DE LATTIN showed (1950) *C. permutatella* (H.-S.) and *C. myella* (HBN.) were thus far confused with each other. Specimens of *Catoptria luctiferella* (HBN.) were generally determined as *C. permutatella* (H.-S.). The specimens of *C. per-*

mutatella (H.-S.) were without exception determined as *C. myella* (HBN.). No differences were found thus far between *C. permutatella* (H.-S.) and *C. myella* (HBN.) except the different structure of genitalia. Therefore it is difficult to ascertain at present the exact distribution of these species without a revision of all published materials determined as *Crambus myellus* (HBN.). Also specimens described as *C. osthelderi* (DE LATTIN) and *C. gozmányi* BLESZ. were determined as „*Crambus*“ *myellus* (HBN.). As is evident from present investigations of these species which were conducted by DE LATTIN and by me, *C. myella* (HBN.) is a species distributed in the Alps and Eastern Carpathians, while *C. permutatella* (H.-S.) is a species very widely distributed in Europe and commonest in the whole group in question. However, the materials from Retyezát Range do not contain the species in question. The materials determined as „*Crambus*“ *myellus* (HBN.) from this region belong to *C. gozmányi* BLESZ. The Yugoslav materials from the Hungarian National Museum (Budapest), which I investigated, belong to *C. osthelderi* (DE LATTIN).

C. permutatella (H.-S.) occurs in mountains and submontane regions. It appears from June to August. It comes most readily to lamplight; during daytime, on the other hand, it is difficult to find. It prefers coniferous trees as pine and spruce from where I often roused it. The caterpillar feeds on mosses.

Examined material:

France: 1 female: „Ascou le Pujal Axles Thermes Ariège 25—30 1949, CH. FISCHER, (1300 m)“, author's coll.

Germany: 1 female: „2 VII 1949, Ammerweiler, Jöst I.“, author's coll. 7 males and females: „Süd-Pfalz Geilweilerhof, 8—16 VII 1949, leg. DE LATTIN“, author's coll.

Czechoslovakia: 2 females: Kačov Bohemia, 26 VI 1948, Dr. RUD. SCHWARZ“, author's coll. 1 male: „Karlstein Bohemia centr., 21 VI 1941, leg. F. CERNY“, author's coll. 1 female: „Srbsko, 24 VI 1939, CERNY“, author's coll.

Poland: 8 males and females from environs of Kraków: Przegorzały, Podgórk, Ojców, 3 VI — 7 VII 1945—1950, author's coll. 1 male: „Góry Świętokrzyskie Św. Katarzyna, 15—18 VII 1934“, author's coll. 1 male: „Maków Podhalański, VI 1947, leg. LEWACKI“, author's coll. 1 male from Rytro, distr. Nowy Sącz, ca 600 m, 15—20 VI 1953, author's coll. 2 males: „Polonia mer. Krynica, 700 m, 15 VII 1949, leg. GAJ“, author's coll. 3 males: „Pieniny Czorsztyn, 6 VII 1950, leg. S. TOLL“, author's coll. 1 male

from Tatry Mts, 1300 m, Mała Świnica, 27 VI 1950, author's coll. 1 male from Gubałówka, Palenica, distr. Nowy Targ, 27 VI 1946, author's coll. Several males and females from environs of Zawiercie, leg. MASŁOWSKI, coll. I. Z. P. A. S., Warszawa. 3 females „Ustroń Równica, 750 m, 14—19 VII 1939, S. TOLL leg.“, author's coll. 4 males and females: „Sudety Duszniki“, author's coll.

***Catoptria gozmányi* BLESZYŃSKI, 1956**

[Pl. XXXVII, fig. 1, pl. LIV, fig. 3, 4, pl. LXXVII, fig. 7, 8]

Catoptria gozmányi BLESZYŃSKI, 1956, Zeit. Wien. Ent. Ges. **41**: 216 pl. 21, fig. 1—2.

Externally this species is delusively similar to *Catoptria permutatella* (H.-S.), however, distinctly different from it in the structure of male as well as female genitalia.

Male genitalia [pl. XXXVII, fig. 1]: pars basalis is very long, narrow, somewhat similar as in *C. myella* (HBN.), but curved upwards. It reaches almost to the end of valva. At its end it is delicately toothed and terminated with a small hook. Second (lateral) process on valva distinctly wider than in *C. permutatella* (H.-S.).

In female genitalia [pl. LV, fig. 3, 4] lamella subgenitalis distinctly better developed than in *C. permutatella* (H.-S.), rather somewhat similar as in *C. myella* (HBN.). It presents a strong long envelope in which ostium bursae and ductus bursae are placed to the half of the length of the latter. Ductus bursae strongly sclerotized almost as far as bursa copulatrix. It is longitudinally ribbed on its surface. Bursa copulatrix large with one signum. The remaining parts of genitalia similar to those of *C. permutatella* (H.-S.).

Examined material:

7 males and females collected by DIÓSZEGHY and UJHELYI in June and July in Retyezát Range, 800—1000 m. Holotype, allotype and 5 paratypes in the coll. Hungarian National Museum in Budapest; 2 paratypes in author's coll.

***Catoptria myella* (HÜBNER 1796)**

[Pl. XXXVII, fig. 4, pl. LIV, fig. 5, pl. LXXVII, fig. 3—4]

Tinea myella HÜBNER, 1796, Samml. Eur. Schmett.: 25, pl. 6, fig. 37.
? *Crambus Conchellus* DUPONCHEL, 1836, (nec DENIS & SCHIFFER-MÜLLER), Hist. Nat. Léop. France **10**: 91, pl. 271, fig. 5 b.

Crambus myellus PETERSEN, 1925, Verh. III Internat. Ent. Kongress: fig. 15.

Catoptria myella BLESZYŃSKI, Zeit. Wien. Ent. Ges. **41**: 217, pl. 21, fig. 3.

Antennae brown, unicolour, of similar shape as in *C. permutatella* (H.-S.). Palps, frons, head, thorax, tegulae, and patagia similarly coloured as in *C. permutatella* (H.-S.). Length of fore wing varies from 8,7 to 11 mm, width from 3 to 4,8 mm. Shape, colouring and design of wings delusively similar to that of *C. permutatella* (H.-S.).

subsp. *mellinella* (DE LATTIN, 1951) [pl. L, fig. 4].

Crambus myellus ssp. *mellinellus* DE LATTIN, 1951, Zeit. Wien. Ent. Ges. **36**: 97, pl. 6, fig. 3, 4.

The specimens with ground of the fore wings strongly paled to yellow, as well as tegulae and patagia. From Switzerland and Italian Alps.

Male genitalia [pl. XXXVII, fig. 4]: uncus and gnathos delusively similar as in *C. permutatella* (H.-S.). Pars basalis differs very much from that of *C. permutatella* (H.-S.). It is very long and it reaches to the end of valva, straight, narrow, only at its end delicately bent downwards. In *C. permutatella* (H.-S.) pars basalis is always strongly bent upwards. The remaining part of male genitalia delusively similar to those of *C. permutatella* (H.-S.).

Female genitalia [pl. LV, fig. 4]: lamella subgenitalis wide, distinctly wider than in *C. permutatella* (H.-S.). In *C. permutatella* (H.-S.) its dorsal edge is shorter than the ventral one, while in *C. myella* (HBN.) the dorsal edge is longer than the ventral one. Ostium bursae with distinct bent „lip“ which is absent in *C. permutatella* (H.-S.). It is a feature on the basis of which these two species may be determined without preparing the genitalia and only by removing the hairs on the end of abdomen. Ductus bursae, similarly as in *C. permutatella* (H.-S.) without loops, strongly sclerotized, with ribbed surface. Bursa copulatrix transparent with one, star-like small signum. *C. myella* (HBN.) is thus far known only from the Alps and Ciban Mts. (DE LATTIN 1951). As I mentioned while discussing the species

C. permutatella (H.-S.), DE LATTIN (1951) stated, that the data in literature concerning *C. myella* (H.-S.) should be generally considered as concerning the species *C. permutatella* (H.-S.) which is the most common species in the group in question, while those concerning the occurrence of *C. permutatella* (H.-S.) concern *C. luctiferella* (HBN.). *C. myella* (HBN.) appears from June to September from 600 m upwards.

Examined material:

Alps: 1 male: „Veldes Oberkrain, 21—30 VI 1943. DANNEHL leg.“, author's coll. 1 male: „24—28 VI 1934. Saint-Martin Vesubie Alpes Marit., CH. FISCHER (1000 m)“, author's coll. 1 female: „1 VII 1950, Kärnten, coll. THURNER“, author's coll. 18 males and females: „Kochel Obb. 600 m Ha. Li., 9 VI — 16 IX 1952—1953, coll. Dr. H. WAGNER“, author's coll.

Catoptria osthelderi (DE LATTIN, 1950)

[Pl. XXXVII, fig. 3, pl. LVI, fig. 2, pl. LXXVII, fig. 5, 6]

Crambus osthelderi DE LATTIN, 1950, Ent. Zeit. Stuttgart **60**: 73, fig. *Crambus myellus* auct. partim.

This species, similarly as *C. myella* (HBN.), is delusively similar in shape and colouring to *C. permutatella* (H.-S.).

In the structure of its male as well as female genitalia both the species show great differences.

Male genitalia [pl. XXXVII, fig. 3]: uncus similar as in *C. permutatella* (H.-S.). Gnathos with strong dorsal conical protuberance at the end, which is absent in all other species of the group in question. Pars basalis developed as strong, long, narrow, sharply pointed hook. It is very strongly curved downwards, and may be found even in the dry state by removing the hairs at the end of abdomen. Valva wide, distinctly wider than that of related species. Aedeagus not straight as in *C. permutatella* (H.-S.) but distinctly curved. Cornuti absent.

Female genitalia [pl. LVI, fig. 2]: lamella subgenitalis with large, deep dorsal incision. This feature is so characteristic, that the females of *C. osthelderi* (DE LATTIN) may be easily distinguished from all related species in the dry state. Ostium bursae pocket-like, distinctly wider than in the related species. Ductus bursae near ostium bursae weakly sclerotized, further

on strongly sclerotized with ribbed surface. Bursa copulatrix transparent with one small, star-like signum.

This species was not distinguished till now from *C. permutatella* (H.-S.) known generally under the name „*Crambus myellus* (HBN.)“; it was discovered and described in 1950 by DE LATTIN. In contrary to other related species, it is rather a lowland element, confined to dry and warm regions. It is rarer than *C. permutatella* (H.-S.). Known thus far from Germany, Poland, Hungary, Austria and Yugoslavia.

Examined material:

Austria: 1 male: „5 VII 1950, Kärnten, coll. THURNER“, author's coll.

Yugoslavia: 1 male: „Zavidovic Kendi“, author's coll.

Roumania: 1 female: „Herkulesf. ASZNER“, author's coll.

Poland: 2 males „Polonia mer., distr. Oświęcim, VII 1951“, author's coll. 1 male (paratype): „Kraków Podgórk, 27 VI 1947 BLESZYŃSKI“, author's coll. 6 males and females (paratypes) from Pilica and Smoleń, VII 1940, leg. MASŁOWSKI, coll. I. Z. P. A. S., Warszawa. 1 female (paratype): „Nierada Lasy Rudnickie, 25 VII 1925, leg. MASŁOWSKI“, coll. I. Z. P. A. S., Warszawa. 3 males and 1 female: „Sanka [distr. Chrzanów], VII 1954, [leg. CHMIEL]“, author's coll. 1 female from Podkowa Leśna distr. Blonie, author's coll. 1 female from environs of Toruń, coll. Zool. Inst. of the M. Kopernik University of Toruń.

Catoptria specularis HÜBNER, 1825

[Pl. XXXVI, fig. 1, pl. LV, fig. 5, pl. LXXVIII, fig. 6—8]

Tinea pinetella HÜBNER, 1796, (nec LINNAEUS), Samml. Eur. Schmett. pl. 6, fig. 36.

Catoptria specularis HÜBNER, 1825, Verz. Bek. Schmett.: 365.

Crambus conchellus DUPONCHEL, 1836, (nec DENIS & SCHIFFERMÜLLER), Hist. Nat. Léop. France 10: 91, pl. 271, fig. 5a.

Crambus Specularis HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 64, Sppl. 87.

Antennae, frons, head, thorax, patagia, tegulae, in shape and colouring similar as in *C. permutatella* (H.-S.). Fore wing of similar shape as in *C. permutatella* (H.-S.). Length of fore wing varies from 10 to 12,5 mm, width from 4 to 5 mm. Ground of the fore wing generally more unicolourly brown than in *C. permutatella* (H.-S.) and related species, in which ground of fore wing generally has sharp palings and darkenings. The third part of basal stripe (white oblique streak) is always

parallel to the outer edge of trapezoidal white spot prolonging basal stripe. In *C. permutatella* (H.-S.) and other related species distance from white streak to the outer edge of white spot prolonging basal stripe visibly greater at the upper part of white streak than in the lower one. Hind wings similarly coloured as in *C. permutatella* (H.-S.).

ab. *catoptrellus* (ZELLER, 1863).

Crambus catoptrellus ZELLER, 1863, Chil. Cramb. Gen. Spec.: 30.

The specimens in which the second part of basal stripe of the fore wings is shorter than in the typical specimens. It is a form analogical to *C. permutatella* (H.-S.) ab. *hercyniae* (HEIN.).

Male copulatory apparatus [pl. XXXVI, fig. 1]: uncus and gnathos delusively similar as in *C. permutatella* (H.-S.) and other related species. Pars basalis strongly developed as large, relatively wide, strongly curved hook. It is so strongly curved that its sharp end points backwards. Aedeagus long, narrow, as long as the whole copulatory apparatus. Cornuti absent.

Female genitalia [pl. LV, fig. 5]: lamella subgenitalis very strongly developed, forms an envelope in which lies ostium bursae. The ventral folds of lamella subgenitalis have distinct bendings, which are absent in the genitally related *C. pyramidella* (TREITSCH.). Ductus bursae strongly sclerotized, with ribbed surface. Bursa copulatrix and short part of ductus bursae behind it weakly sclerotized, transparent. One small, star-like signum.

C. specularis HBN. is distributed in the Alps. It is also reported from Transsylvanian Alps [Fogarash Mts., Bulea (SZENT-IVÁNY & UHRIK-MÉSZÁROS, 1942)], however, one cannot be sure whether these data are not due to confusion of this species with other related, externally very similar ones.

Examined material:

Alps: 1 male: „F. VII 1891, Wallis“, author's coll. 2 males: „Zermatt“, author's coll. 1 male: „12 VII 1950, Petzen Karawanken Kärnten“, author's coll. 3 males „Engadin Semadeni“, coll. I. Z. P. A. S., Warszawa. 3 males from Albula, Bergün, coll. I. Z. P. A. S., Warszawa. 1 male: „Bolzano Alpe di Siusi, 29 VII 1935, A. Fiori“, author's coll. 1 male: „Tirol Ca-

nazei, 1 VIII 1914", A. FRORI", author's coll. 1 female: „Stiria“, author's coll. 1 male: „Arolla Volais“, author's coll. 2 males from Arosa, coll. I. Z. P. A. S., Warszawa.

***Catoptria pyramidella* (TREITSCHKE, 1832)**

[Pl. XXXVI, fig. 2, pl. LV, fig. 4, 6, pl. LXXIX, fig. 4]

? *Tinea margaritella* FABRICIUS, 1794, (nec DENIS & SCHIFFERMÜLLER), Entomol. Syst. 3/2: 295 (s. ZELL.).

? *Crambus margaritaceus* FABRICIUS, 1798, (nec DENIS & SCHIFFERMÜLLER), Suppl. Entomol. Syst.: 470 (s. ZELL.).

Chilo Pyramidellus TREITSCHKE, 1832, Schmiett. Eur. 9: 104.

Crambus pyramidellus ZELLER, 1863, Chil. Cramb. Gen. Spec.: 30.

Crambus Pyramidellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmiett. Eur. 4: 64, Sppl. 5.

Antennae unicolour, brown, of similar shape as in the related species. Palps brown outside, from inside and dorsally whitish. Frons whitish, rather strongly convex, rounded. Head whitish. Patagia brown on sides, in the middle whitish. Thorax and tegulae brown. Length of the fore wing varies from 10,5 to 13 mm, width from 4 to 5,5 mm. Costal margin very slightly convex, apex rounded. Outer margin slightly bent outwards, slightly oblique. Ground of the fore wing dull brown, below costal margin generally yellowish. Basal stripe uniform, interrupted. It reaches almost to the outer margin; at wing base narrow, then strongly widened, obliquely truncate at the end. From below it is bordered dark, black-brown. Dark dots near outer margin well developed. Cilia on the outer margin somewhat lustrous, several times more or less distinctly interrupted white. This is an important specific feature distinguishing this species from the externally very similar *C. spatulella* (TRTL.) and *C. margaritella* (DEN. & SCHIFF.). Hind wings almost dull, grey-brown with lighter dirty whitish cilia.

Male genitalia [pl. XXXVI, fig. 2] very similar as in *C. specularis* HBN. and *C. spatulella* (TRTL.). Uncus and gnathos delusively similar to those of these two and other related species of the group in question. Pars basalis strongly developed as a strong curved hook, sharply bordered from valva. It is sharply pointed at the end, narrowed, less curved than in

C. specularis HBN., and distinctly smaller than in *C. spatulella* (TRTL.). The second (lateral) process on valva narrow, similar as in *C. specularis* HBN., and visibly narrower than in *C. spatulella* (TRTL.). Valva wide, distinctly narrowed at its end. Aedeagus as long as the whole copulatory apparatus, very narrow, visibly curved, not armed.

Female genitalia [pl. LV, fig. 4, 6]: lamella subgenitalis very strong developed, surrounding ostium bursae. In dorso-ventral view the ventral fold with even edges, while in *C. specularis* HBN. it has distinct bendings. In related *C. spatulella* (TRTL.) lamella subgenitalis more weakly developed, it forms two rather separated lobes. In lateral view the female genitalia of the species in question is somewhat similar as in *C. luctuella* (H.-S.), however, *C. luctuella* (H.-S.) has a strong ventral process, which is absent in *C. pyramidella* (TREITSCH.). Ostium bursae rather weakly widened. Ductus bursae not strongly sclerotized, as in *C. specularis* HBN., visibly longer than in the latter, very narrow. Bursa copulatrix transparent, with one, small star-like signum.

C. pyramidella (TREITSCH.) is an alpine element, distributed widely in the Alps. It occurs in July and August in various altitudes from 700 to about 2000 m. The caterpillar feeds on mosses.

The relation of *C. pyramidella* (TREITSCH.) to *C. specularis* HBN. despite great differences in the design of the fore wings is very strong as shown by the similarity of their genitalia. This is confirm also by the fact that already twice both these species were found in copula.

Examined material:

Alps: 2 females: „14 VII 1949, Klagenfurt Karawanken Kärnten 1700 m“, author's coll. 1 female: „18 VII 1940, Glocknergeb. Kärnten, 800 m, leg. THURNER“, author's coll. 10 males and females: „Bavaria alp. Karwendelgebirge b. Mittenwald, 1400—1600 m, Anf. VII 1950, leg. OSTHELDER“, author's coll. 1 female: „Bavaria alp. Hachelhöffe b. Beschlechsgarden“, author's coll. 1 male: „Kochel Oby. 750 m Li. 21 VII 1952, leg. Dr. H. WAGNER“, author's coll. 1 male: „b/Mittenwald Obb., 1600 m, 15 VII 1952, leg. Dr. H. WAGNER“, author's coll. 1 spec.: „Engadin Semadeni“, coll. I. Z. P. A. S., Warszawa. 1 spec.: „Wallis Berial“, coll. I. Z. P. A. S., Warszawa.

***Catoptria spatulella* (TURATI, 1919)**

[Pl. XXXVI, fig. 4, pl. LVI, fig. 1, pl. LXXIX, fig. 3]

Crambus spatulellus TURATI, 1919, Atti Soc. ital. 58: 183, figs.? *Crambus pyramidellus* auct. p. partim.

Antennae and palps of similar colour and shape as in the previous species. Frons rather strongly convex, rounded, white. Head white. Patagia brown on sides, white in the middle. Thorax and tegulae brown. Length of fore wing varies from 10,5 to 13 mm, width from 4,3 mm to 5,2 mm. Shape of the fore wing similar as in *C. pyramidella* (TREITSCH.). Ground of the fore wing brown, more uniform than in *C. pyramidella* (TREITSCH.). Basal stripe snow-white, similar in its size and shape as in *C. pyramidella* (TREITSCH.). Dark dots at the outer margin slightly developed or disappearing. Cilia on the outer margin slightly lustrous, brown, rather unicolour. Only sometimes the basal streak of scales several times interrupted by white. In the very related *C. pyramidella* (TREITSCH.) cilia on the outer margin of the fore wing several times interrupted by white on its whole length. Hind wings with slight lustre. Cilia of hind wing lighter than ground, creamy.

Male genitalia [pl. XXXVI, fig. 4] similar in its structure as in the previous species. Uncus and gnathos delusively similar as in *C. pyramidella* (TREITSCH.) and other related species. Pars basalis developed as strong curved hook, sharply bordered from valva, however, distinctly smaller than in *C. pyramidella* (TREITSCH.). Aedeagus as long as the whole copulatory apparatus, very narrow, curved, without cornuti.

Female genitalia [pl. LVI, fig. 1]: lamella subgenitalis presents at sides two strongly sclerotized sheets, which, however, surround ostium bursae less delicately than in related species. Ostium bursae tube-like, ductus bursae long, very narrow, rather not very strongly sclerotized. Bursa copulatrix transparent, with one star-like signum.

C. spatulella (TRTI.) is known thus far only from Apennins. It occurs in July and August.

Examined material:

Italy: 1 male: „Emilia Radici, 26 VII 1929, A. FIORI“, author's coll.
2 males and 2 females: „Reggio Emilia Gabellina, 10 VII — 1 VIII 1931, A. FIORI“, author's coll.

***Catoptria luctiferella* (HÜBNER, 1810—1813)**

[Pl. XXXVIII, fig. 2, pl. LXXVIII, fig. 3]

Tinea luctiferella HÜBNER, 1810—1813, Samml. Eur. Schmett.: pl. 47, fig. 324.

Chilo Luctiferellus GERMAR & ZINCKEN, 1817, Magazin Entomol. 2:77.

Catoptria Luctiferalis HÜBNER, 1825, Verz. Bek. Schmett.: 365.

Crambus luctiferellus DUPONCHEL, 1836, Hist. Nat. Lép. France 10: 89, pl. 270, fig. 4.

Catoptria luctiferella BLESZYŃSKI, 1956, Zeit. Wien. Ent. Ges. 41: 217, pl. 21, fig. 4.

Crambus permutatellus auct. partim.

Antennae brown, unicolour, of similar shape as in related species. Palps short, brown. Frons brownish, convex, rounded. Head brown. Patagia, thorax, and tegulae brown, sometimes delicately lighter in places. Length of the fore wing about 12 mm, width about 5 mm. Costal margin almost straight, or very delicately convex. Apex rounded. Outer margin almost straight or very slightly bent outwards, slightly oblique. Ground of the fore wing dark brown, sometimes more or less whitened. Design of the fore wing white, of similar shape as in such species as *C. permutatella* (H.-S.). Before apex a white spot which sometimes is connected with the third part of basal stripe (oblique white streak). This streak in lighter coloured specimens—generally females—is connected with dorsal margin by a whitish spot. Above the dorsal margin a spot-like, more or less developed white palings. Cilia on the outer margin with slight lustre, several times sharply interrupted by white. Hind wing almost dull, dark brown, sometimes whitish in places. Cilia of the hind wings grey-brown, as dark as ground of wing or only delicately paler than that.

This species is very similar to the following one. In *C. luctuella* (H.-S.), however, the head is white while here it is visibly coloured dark. Cilia of the hind wings of *C. luctuella* (H.-S.) visibly paler than ground of hind wings, whitish, while in *C. luctiferella* (HBN.) it is dark grey-brownish. BURMANN first stated that *C. luctuella* (H.-S.) is a species distinct from *C. luctiferella* (HBN.) (1951).

ab. *heeriella* (ZELLER, 1863).

Crambus luctiferellus var. *heeriellus* ZELLER, 1863, Chil. Cramb. Gen. Spec.: 30.

The specimens with strongly whitened fore wings.

ab. *reductella* (BURMANN, 1951).

Crambus luctiferellus f. *reductellus* BURMANN, 1951, Mitt. Münch. Ent. Ges. 41: 150, pl. 8, fig. 3, d, e, f.

The specimens with visibly narrowed basal stripe and spots prolonging it.

ab. *griseella* (BURMANN, 1951).

Crambus luctiferellus f. *griseellus* BURMANN, 1951, Mitt. Münch. Ent. Ges. 41: 153, pl. 8, fig. 3, g.

The darkened specimens, however, with visible design of the fore wings.

ab. *atrella* (BURMANN, 1951).

Crambus luctiferellus f. *atrellus* BURMANN, 1951, Mitt. Münch. Ent. Ges. 41: 154.

Almost black specimens.

ab. *butyrella* (WEBER, 1945).

Crambus luctiferellus f. *butyrellus* WEBER, 1945, Mitt. Schweiz. Ent. Ges. 19.

The specimens with white design of the fore wings somewhat darkened to yellowish.

Male genitalia [pl. XXXVIII, fig. 2] in general structure similar as in related species. Pars basalis long, strongly curved and narrowed at its end. It is sharply bordered from valva, and separated before its end. The terminal part of pars basalis somewhat longer and narrower than in the next species. I have not examined the female of *C. luctiferella* (HBN.).

C. luctiferella (HBN.) is an Alpine element. Generally it appears from 1300 to 3000 m in July and August. At present it is difficult to ascertain whether the distributions of the described species and the following one are completely the same or somewhat different. Nevertheless, I have both species

from Tirol, and this means that their range at least partially overlap.

Examined material:

Alps: 1 male: „27 VII 1946, Glocknergeb. Kärnten, 1500 m, leg. THURNER“, author's coll. 1 male: „Tyrolis Ortler Sulden, SCHMIDT, 9 VII 1930“, author's coll. 2 males: „Tirol Karwendel, 2300 m, VIII 1952, BURMANN“, author's coll.

***Catoptria luctuella* (HERRICH-SCHÄFFER, 1856)**

[Pl. XXXVIII, fig. 1, pl. LV, fig. 1—2, pl. LXXVIII, fig. 1, 2, 4, 5]

Crambus luctuellus HERRICH-SCHÄFFER, 1856, Syst. Bearb. Schmett. Eur. 6: 145, Sppl. 21.

Catoptria luctuella BLESZYŃSKI, 1956, Zeit. Wien. Ent. Ges. 41: 217, pl. 21, fig. 5, 6.

Crambus luctiferellus auct. p. partim.

Antennae of shape and colouring similar as in previous species. Palps brown outside, whitish inside. Frons and head white, sometimes a little darkened. Patagia brown on sides, whitish in the middle. Thorax brown, whitish in the middle. Length of the fore wing varies from 11 to 12,5 mm, width from 4,7 to 5,5 mm. Shape of fore wing similar as in the previous species. Ground and design of the fore wing very similar as in *C. luctiferella* (HBN.). Hind wings almost dull, dark brown. Cilia of the hind wings whitish to white-greyish, visibly lighter than ground of wing. It is an important feature distinguishing this species from the previous one.

ab. *fumella* (BURMANN, 1951).

Crambus luctuellus f. *fumellus* BURMANN, 1951, Mitt. Münch. Ent. Ges. 41: 154.

Specimens with darkened fore wings.

ab. *nigricella* (KRONE, 1911).

Crambus luctiferellus var. *nigricellus* KRONE, 1911, Jahr. Ber. Entom. Ver. Wien: 21.

Strongly darkened almost black specimens, with the white design of the fore wings tending to disappear.

ab. *lineella* (BURMANN, 1951).

Crambus luctuellus f. *lineellus* BURMANN, 1951, Mitt. Münch. Entom. Ges. 41: 150, pl. 8, fig. 1, g. f.

Form analogical to *C. luctiferella* ab. *reductella* (BURMANN).

Male genitalia [pl. XXXVIII, fig. 1] very similar as in the previous species, however, the terminal part of pars basalis is rather shorter and wider than in the previous species.

Female genitalia [pl. LV, fig. 1, 2] is very characteristic by the presence of strong process of lamella subgenitalis. It is situated ventrally and well visible in lateral view of copulatory apparatus. Ductus bursae strongly sclerotized, with ribbed surface. Bursa copulatrix transparent. One small, star-like signum.

C. luctuella (H.-S.), similarly as the previous species, is an Alpine element. It occurs in high altitudes in July and August.

Examined material:

Alps: 1 female: „18 VII 1947, Kerschb. A. La. Osttir., leg. THURNER“, author's coll. 1 male: „21 VII 1936, Karawanken Konhütte, 1200 m, THURNER“, author's coll. 2 males and 1 female: „Styria Gesäuse Zinödl, 1700—1800 m, 3 VII 1947, J. KLIMESCH“, author's coll. 1 male: „Rax Alpe, 1750 m, 11 VII“, author's coll. 1 female: „Tirol Stubai 2500 m Hoher Burgstall, 16 VIII 1941, J. KLIMESCH“, author's coll.

***Catoptria acutangulella* (HERRICH-SCHÄFFER, 1849)**

[Pl. XXXVI, fig. 3, pl. LIV, fig. 6, pl. LXXIX, fig. 1—2]

Crambus acutangulellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 61, Sppl. 15, 16.

Antennae whitish, in shape similar to the related species. Palps white, darkened brown outside. Frons and head white. Frons very slightly convex, rounded. Thorax, patagia, and tegulae white to brownish. Length of fore wing from 11,5 to 13 mm, width from 4,3 to 5 mm. Costal margin almost straight, apex rounded, outer margin below apex very delicately wavy, convex, slightly oblique. Ground of the fore wing varies from white to grey-brownish. Basal stripe absent. Two brownish transverse bands. Outer one below costal margin arched toward outer margin, below with indistinct bend pointed towards wing base. Inner band below costal margin angled, still lower

strongly oblique. Dark dots at the outer margin strongly developed. Cilia on the outer margin lustrous, greyish, several times interrupted by white, with dark basal streak of scales. Hind wings slightly lustrous, white-greyish. Cilia of hind wings snow-white.

subsp. *macedonica* (OSTHELDER, 1951).

Crambus acutangulellus ssp. *macedonicus* OSTHELDER, 1951, Ver. Zool. Staatssamml. Münch. 2: 56.

Specimens with stone-grey ground of the fore wings. From Crni Vrh (Macedonia).

ab. *inangulella* (SCHAWERDA, 1908).

Crambus acutangulellus ab. *inangulellus* SCHAWERDA, 1908, Verh. Zool.-bot. Ges. Wien 58: (254).

One white female, with disappearing design of the fore wings. From Vucija bara.

ab. *albidella* (KRONE, 1911).

Crambus luctiferellus var. *albidellus* KRONE, 1911, Jahr. Ber. Entom. Ver. Wien. 21.

This form, according to BURMANN (1951), should be considered as belonging to the described species.

Specimens with whitened ground of the fore wings.

Male genitalia [pl. XXXVI, fig. 3] in general similar as in the related species. Uncus and gnathos delusively similar as in *C. permutatella* (H.-S.) and other related species. Pars basalis similar as in *C. specularis* HBN., however, stronger and wider. Valva sharply pointed, strongly narrowed at its end. The second (lateral) process on valva large, wide, toothed from the inner side. Aedeagus similar as in *C. specularis* HBN. or *C. pyramidella* (TREITSCH.).

In female genitalia [pl. LIV, fig. 6] lamella subgenitalis forms two strong folds at sides. Lamella subgenitalis wider than in *C. permutatella* (H.-S.) but narrower than in *C. myella* (HBN.). Ductus bursae strongly sclerotized with ribbed surface. This sclerotization ends distinctly before bursa copulatrix. Bursa copulatrix transparent, with one small, star-like signum.

C. acutangulella (H.-S.) is a montane species, distributed in the Balkans.

Examined material:

Several males and females from Herzegovina, coll. Zoological Museum of the Humboldt University in Berlin, and author's coll.

GROUP 3

Group type: *Catoptria mytilella* (HBN.)

The species belonging here externally approach the representatives of the group *C. permutatella* (H.-S.). On the fore wings they have a white basal stripe, a white oval spot prolonging it and a white outer band. In the place of this band in the species of the group *C. permutatella* (H.-S.) which have a similar design of fore wings as that described above there appears only a white oblique streak. The differences on the basis of which I separated both groups, *C. mytilella* (HBN.) and *C. permutatella* (H.-S.) are in their genitalia. In males of the representatives of the group *C. permutatella* (H.-S.) aedeagus does not show any differentiations; it is smooth and without cornuti. In the species of the group *C. mytilella* (HBN.), on the other hand, aedeagus in the males has always a strong finger-like apical process and several long cornuti. Besides pars basalis in the species of the group *C. mytilella* (HBN.) is thickened club-like near its end, while in the species of the group *C. permutatella* (H.-S.) it is always pointed. Considerable differences are to be observed in females, too. The females of the species of the group *C. mytilella* (HBN.) show a simpler structure of genitalia and are characterised by the lack of genital differences, while in species of the group *C. permutatella* (H.-S.) we found distinct specific differences in both sexes. It is a most interesting feature, but by no means an isolated one. Similar cases occur in such groups as *C. pinella* (L.) and *C. radiella* (HBN.) although not as a rule as it is in the species of the group *C. mytilella* (HBN.). Two of the European species belong to the group *C. mytilella* (HBN.) viz. *C. mytilella* (HBN.) and *C. aetnella* (ZERNY). These species differ externally very much

by their coloration, while showing considerable similarity in design. It could also be supposed that *C. aetnella* (ZERNY), a species endemic for Sicily and showing no genital differences with *C. mytilella* (HBN.), may be only a subspecies of the latter moth, which is widely distributed in Central and Southern Europe. However, following facts speak against this supposition: while investigating the genitalia of several Asiatic species of the genus *Catoptria* HBN. I found that three species, viz. *C. dimorphella* (STGR.), *C. colchicella* (LED.) and *C. pfeifferi* (OSTH.) belong to the group *C. mytilella* (HBN.). All these species have identical genitalia as *C. mytilella* (HBN.). It is impossible that these species are only geographical subspecies of *C. mytilella* (HBN.) for they have the design of the fore wings very different from *C. mytilella* (HBN.). According to a close analogy I consider *C. aetnella* (ZERNY) as a distinct, although probably phylogenetically very young species.

Catoptria mytilella (HÜBNER, 1800-1805)

[Pl. XXXIX, fig. 6, pl. LVI, fig. 3, pl. LXXX, fig. 1—4]

Tinea mytilella HÜBNER, 1800—1805, Samml. Eur. Schmett.: pl. 42, fig. 287.

Chilo Mytilellus GERMAR & ZINCKEN, 1817, Magazin Entomol. 2: 78.

Catoptria Mytilalis HÜBNER, 1825, Verz. Bek. Schmett.: 365.

Crambus mytilellus [sic!] DUPONCHEL, 1836, Hist. Nat. Lép. France 10: 87, pl. 271, fig. 6.

Crambus Mytilellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 63.

Antennae brown, in male serrate from below, in female setaceous. Palps brown on sides, white from inside and underneath. Frons convex, with conical protuberance, smooth, white. Head white. Patagia white in the middle, brown on sides. Thorax similarly coloured as patagia. Tegulae brown. Length of the fore wing varies from 8 to 10,5 mm, width 3,5 to 4,2 mm. Costal margin straight, apex delicately rounded. Outer margin slightly convex. Ground of the fore wings light brown, slightly lustrous. Basal stripe white, strongly contrasting with ground of wing; it reaches to half its length, near end it is sharply truncate obliquely. A large white spot in shape of a rounded rhomb in its

prolongation. Between this spot and outer margin lies white outer band. It is arched. Above dorsal margin this band sometimes tends to disappear. I could examine only a single female, and its outer band was completely reduced. The lack of other female specimens did not allow me to ascertain if this feature is a rule for females or if the examined female was an aberrative form only. At the outer margin several dark dots. Cilia on the outer margin lustrous, brown, a little darker at the base than at the ends. Hind wings with a slight lustre light grey-brownish. Cilia somewhat lighter-coloured than ground of wing with darker basal streak, white near base, marked by a light-coloured delicate line. The specimens from Greece show considerable paling of hind wings.

Male genitalia [pl. XXXIX, fig. 6]: uncus and gnathos slender, long, similar in shape as in the species of the group *C. permutatella* (H.-S.). Saccus oval. On valva pars basalis and lateral process very well developed. Pars basalis separated at the base of valva, has the shape of a long club thickened at the end and rounded. Lateral process on the outer side of valva pointed. Aedeagus terminated by very strong, long, finger-like process. Several long, grouped cornuti.

Female genitalia [pl. LVI, fig. 3]: gonapophyses anteriores absent. Lamella subgenitalis developed normally, weakly developed in comparison to the species of the group *C. permutatella* (H.-S.). The accretion of lamella subgenitalis to ductus bursae strong. Ostium bursae of the shape of a wide bowl. Ductus bursae relatively long, with a loop, strongly sclerotized, with a delicate longitudinal ribbing on the surface. Bursa copulatrix transparent. One small, star-like signum.

C. mytilella (HBN.) is known from Central, Western and Southern Europe. It was reported also from Altai. The Northern border of its distribution in Central Europe is probably formed by the Carpathians. It occurs from June to August in lowlands as well as in mountains.

Examined material:

France: 1 male: „Gallia mer. Vence, SCHMIDT, 1926 VIII 12“, coll. TOLL.

Germany: 1 male: „1865, Wiesbaden“, author's coll.

Italy: 1 male: „Abruzzo Gran Sasso, 24 VII 1935, A. FIORI“, author's coll. 1 male: „Genova Torriglia, IX 1940, A. FIORI“, author's coll.

Greece: 1 male: „Graec. 12 Stgr.“, author's coll.

Yugoslavia: 1 male: „Macedonia Ochrida, 7 VIII 1936, WOLFSCHLÄGER“, coll. TOLL. 1 male: „30 VII — 6 VIII 1934 Petrina Plan. Maced., 1600 m, leg. THURNER“, author's coll.

Czechoslovakia: 1 female: „Jarov, 14 VII 1941, Čechy (Bohemia) Dr. R. SCHWARZ“, author's coll.

Catoptria aetnella (ZERNY, 1943)

[Pl. XXXIX, fig. 4, pl. LVI, fig. 4, pl. LXXX, fig. 5]

Crambus aetnellus ZERNY, 1943, Zeit. Wien. Ent. Ges. 38: 138, pl. 9, fig. 5.

Antennae unicolour, black-brown. Palps white from above, black-brown outside, whitish inside. Frons snow-white with conical protuberance. Patagia black-brown on sides, snow-white in the middle. Thorax similarly coloured as patagia. Tegulae black-brown. Length of the fore wing 10 mm, width 3,5 mm. Ground of the fore wing black-brown, with snow-white design. Basal stripe and oval spot prolonging it delusively similar in shape and size as in *C. mytilella* (HBN.). Outer band placed similarly as in *C. mytilella* (HBN.) but distinctly wider than in the latter. This band almost touches the outer margin in its middle. Cilia on the outer margin dark, in the upper part three times interrupted by white, at the base whitish. Hind wings with slight lustre, light greyish. Cilia of hind wings delicately paler than ground, whitish-grey.

Male [pl. XXXIX, fig. 4] and female [pl. LVI, fig. 4] genitalia delusively similar to those of *Catoptria mytilella* (HBN.). I have found no greater differences in their structure. In female gonapophyses posteriores very weakly visible, while in *C. mytilella* (HBN.) they are completely reduced. I consider this species as a distinct one, as I mentioned earlier while discussing the group *Catoptria mytilella* (HBN.).

Thus far *C. aetnella* (ZERNY) is known only from Etna, from an altitude of 1600—2200 m.

Examined material:

Sicily: male paratype: „Sizilia Aetna, 1600—2200 m, 8—17 VIII 1938, SCHWINGENSCHUSS“, coll. Museum of Natural History in Vienna; female paratype: „Sizilia Aetna, 1600—2200 m, 8—17 VIII 1938, SCHWINGENSCHUSS“, author's coll.

GROUP 4

Group type: *Catoptria pinella* (L.)

Three European species belong here, i. e. *C. pinella* (L.), *C. corsicella* (DUP.), and *C. vilarrubiae* (AGENJO) almost identical in the structure of their genitalia but distinctly different in the wing design. Some species of the group *C. radiella* (HBN.) and *C. permiaca* (PET.) such as *C. conchella* (DEN. & SCHIFF.) and *C. permiaca* (PET.) are externally similar to them. On the fore wings there appears a wide basal stripe, and a wide oval spot prolonging it. The outer band is present or absent. The characteristic feature of the male genitalia is gnathos (not widened at the end), a sheet-like development of pars basalis, and the lack of cornuti in the aedeagus. In the females ostium bursae relatively weakly developed with slits at the margins.

C. pinella (L.) is a species widely distributed on the European Continent and British Isles, while *C. corsicella* (DUP.) is a Corsican endemic. It is possible that *C. corsicella* (DUP.) originated from *C. pinella* (L.) through the insular isolation. In any case the division of these two species took place not long ago, as is evident from the almost complete lack of differences in the structure of their genitalia.

***Catoptria pinella* (LINNAEUS, 1758)**

[Pl. XLI, fig. 1, pl. LVI, fig. 7, pl. LXXXI, fig. 5—6]

Phalaena Tinea Pinella LINNAEUS, 1758, Syst. Naturae Ed. 10: 824.

Phalaena Tinea Pinetella LINNAEUS, 1761, Fauna Svecica: 355.

Phalaena Virginella SCOPOLI, 1763, Entomologia Carniolica: 246.

Phalaena pinella CLERCK, 1759—1764, Icones Insect.: pl. 4, fig. 15.

Tinea Pinetella DENIS & SCHIFFERMÜLLER, 1775, Syst. Verz. Schmett.

Vien. Geg.: 134.

Phalaena Tinea conchella HÜBNER, 1793, (nec DENIS & SCHIFFERMÜLLER),

Samml. Vög. Schmett.: 10, pl. 44.

Tinea conchella HÜBNER, 1796, (nec DENIS & SCHIFFERMÜLLER),

Samml. Eur. Schmett.: 25, pl. 6, fig. 38.

Crambus pineti FABRICIUS, 1798, Suppl. Entomol. Syst.: 470.

Phalaena pinetella DONOVAN, 1799, Nat. Hist. Brit. Ins. 7: 27.

Palparia pineti HAWORTH, 1811, *Lepidoptera Britannica* 3: 487.

Chilo pinetellus GERMAR & ZINCKEN, 1817, Magazin Entomol. 2: 72.

Catoptria Pinetalis HÜBNER, 1825, Verz. Bek. Schmett.: 365.

Crambus Pinetellus STEPHENS, 1834, Illustr. Brit. Entomol. *Haustellata* 4: 325.

Chilo pinetellus ZETTERSTEDT, 1840, Insecta Lapponica: 995.

Crambus Pinellus (a) SNELLEN, 1882, Vlind. Ned. 1: 104.

Antennae light brown, in male serrate, in female setaceous. Palps brown outside, white inside. Frons with conical protuberance, white. Head white. Patagia and thorax yellow-brown on sides, white in the middle. Tegulae ochre-yellow to yellow-brown. Length of fore-wing varies from 8 to 11,5 mm, width from 3,5 to 4,3 mm. Costal margin straight or very slightly convex. Apex delicately rounded. Outer margin rather straight, generally slightly oblique, sometimes a little wavy below apex. Fore wing dull with rusty-yellow ground. Basal stripe snow-white, sharply bordered, reaching half of wing length, very narrow at the base, wide at the end, obliquely cut. Similarly coloured large spot in shape of rounded rhomb in its prolongation. Near the outer edge of this spot there is a narrow white line, sometimes very indistinct. Ground between basal stripe and white spot prolonging it (as well as near its upper and outer edge) brown, visibly darker than the rest of wing's ground. This darkening at the outer margin of the oval white spot often runs as a narrow streak to costa and the ground near this streak is very narrowly and quite indistinctly paled. This makes the impression that this species once had a clear band and now the traces of it are marked as a bicoloured ground in its place. It is also possible that this band is just in the stage of development in this species. I have a specimen of male *C. pinella* (L.) from England in which a rather distinct white line appears near the outer edge of the white spot prolonging the basal stripe. This line is connected with costal margin by an indistinct paling of the ground. At the outer margin generally several dark dots. Cilia on the outer margin brown with visible lustre. Hind wings with a slight lustre, greyish-whitish at the base. Cilia of hind wings paler than ground of wing.

? subsp. *albarracinella* (AGENJO, 1954).

Crambus pinellus subsp. *albarracinellus* AGENJO, 1954 Eos 30.

AGENJO writes:

„SEEBOLD (Ent. Zeits. Iris, t. XI, p. 298, 1898), cita un *Crambus pinellus* v. *albarracinellus* HERING, cogido en julio, en Albarracín, provincia de Teruel, cuya descripción, según ZERNY (Eos, t. III, p. 447, 1927) no ha sido publicada. Este último autor vió los tres ejemplares conservados en la colección SEEBOLD, detrás de la etiqueta de var. *albarracinellus* y escribió que no tenía ningún individuo de Albarracín, para comparar con ellos. Yo los he estudiado. Son 1 ♂ y 2 ♀♀, les cuales anatómicamente concuerdan bien con *pinellus* (L.), pero externamente una pareja diverge de la forma tiponominal, porque las dos manchas plateadas del anverso de las alas anteriores están más aproximadas entre sí, que en *pinellus* típica, hasta el punto de que en la ♀ se tocan. En la ostra ♀ los dos „espejos“ aludidos llegan a fundirse, constituyendo una banda como en *margaritellus* (HB.). A esta forma extrema podría aplicársele muy bien el nombre de *albarracinellus* SEEBOLD i. l. La genitalia no varía. En el caso de que todos los individuos de dicha comarca presentaran la misma anomalía más o menos acusada, habría que considerarlos como una nueva subespecie“.

Without the types of this form I could not solve whether *albarracinellus* is only a subspecies of *C. pinella* (L.) or a distinct species.

Male genitalia [pl. XLI, fig. 1]: uncus and gnathos long, slender, more or less equal in length. Uncus pointed with a distinct tooth below. Gnathos rather sharp at the end, slightly bent. Tegumen relatively very wide. Pars basalis sheet-like, very well developed, strongly sclerotized. The second (lateral) process on valva rounded; wide in comparison with that of *C. corsicella* (DUP.). Aedeagus a little shorter than the whole copulatory apparatus without any differentiations and cornuti, wholly uniformly sclerotized.

Female genitalia [pl. LVI, fig. 7]: gonapophyses anteriores absent. Lamella subgenitalis strongly accreted to ostium bursae. Ostium bursae relatively weakly developed, rather narrow, with incisions at both sides. Ductus bursae straight, without loops, strongly sclerotized with delicate longitudinal

ribbing. Bursa copulatrix transparent with one small, star-like signum.

C. pinella (L.) shows great external similarity to *C. permiaca* (PET.). Both these species are almost indistinguishable from each other, only the fore wings of *C. permiaca* (PET.) are a little wider in comparison with those of *C. pinella* (L.). The only certain difference between these species is the shape of frons. In *C. pinella* (L.) frons is visibly conical, convex, while in *C. permiaca* (PET.) it is only slightly convex and never conical. It should be mentioned that according to the structure of genitalia *C. permiaca* (PET.) forms a separate group. *C. pinella* (L.) and *C. permiaca* (PET.) are apparently vicarious species in the regions of Europa and Asia. *C. permiaca* (PET.) is known from Ural and Manchuria, *C. pinella* (L.) was reported till now exclusively from Europe.

C. pinella (L.) is widely distributed in Europe. It is one of the few lowland species of the genus *Catoptria* HBN. In the Alps it reaches 1500 m. Not known from Tatry Mts. It is a form confined rather to dry regions appearing most often in young pine woods. It was named *pinella* probably because of its habit of resting on the pine twigs. Nevertheless, its caterpillar does not feed on pines but on mosses similarly as many other species of the genus *Catoptria* HBN. *C. pinella* (L.) occurs from June to end of August.

Examined material:

France: 1 male and 2 females: „Ascou le Pujal Axles Thermes Ariège, 6—12 VII 1949, 1400 m, Ch. FISCHER“, author's coll. 1 male and 1 female: „Ville (B.-R.) VIII 1922 [and] 24 VII 1929“, author's coll. 1 male: „Vannes, 6 VII“, author's coll.

Great Britain: 1 female: „Brockenhurst Hampshire, 16 VI 1913, R. SOUTH“, author's coll. 1 male: „Beaconsfield Bucks. 3: 5 ex W. et D. STOCK, 1950“, author's coll.

Austria: 1 male: „14 VI 1950, Obir 1500 m Karawanken Kärnten“, author's coll.

Switzerland: 1 spec. from Bergün, coll. I. Z. P. A. S., Warszawa.

Italy: 1 male: „Bologna Ravona, 29 VII 1949, A. FIORI“, author's coll.

Hungary: 1 female: „Királyhalom, Dr. SCHMIDT, 1933 VII 20—31“, author's coll.

Czechoslovakia: 1 male and 1 female: „Kačov Bohemia 1 VII, 1935 [and] 6 VII 1934, Dr. R. SCHWARZ“, author's coll.

Poland: 2 males from Sudety Mts., Duszniki, author's coll. 1 male from Bielinek n/Odrą, author's coll. 15 males and females from Podgórk, distr. Kraków, 22 VI — 17 VII 1946—1949, author's coll. 21 males and females from environs of Zawiercie, VI—VIII, coll. I. Z. P. A. S., Warszawa. 17 males and females from environs of Szczecin, coll. I. Z. P. A. S., Warszawa. 2 spec. from Poznań, coll. I. Z. P. A. S., Warszawa. 10 males and females from Łańsk—Rybaki, distr. Olsztyn, 24 VII 1952, author's coll. 7 males and females from Kretowiny, distr. Morąg, 18—28 VII 1953, author's coll. 1 female: „Ligota Tworkowska ad Lubomia G. Śląsk, VIII 1950, DROZDA“, author's coll.

USSR: Several spec. from Western Podolia (Dobrowlany, Krzywce, Wołczków, Borszczów, VI—VIII, 1934—1937), coll. I. Z. P. A. S., Warszawa and coll. TOLL.

Catoptria vilarrubiae (AGENJO, 1954)

Crambus vilarrubiae AGENJO, 1954, Eos 30:

I give here the original description of this species:

„*Crambus vilarrubiae* nov. sp. (lám. XI, figs. 1 y 2), Holotipo ♀ de Montgrony a 1.600—1.665 m., en Gombreny, Gerona. (En Col. R. AGENJO).

♀. Cabeza con el fronto-clípeo convexo, cubierto de pilosidad blanquecino-amarillenta. Antenas setáceas, pasando en su longitud del borde costal de las alas anteriores; con el escapo dilatado y revestido de escamas y pelitos blancos, y el flagelo doradooscuro provisto en su cara superior e plaquitas cuadrangulares — una sobre cada artejo — integradas por escamillas aplastadas sobre la pieza, y muy corta y apretada pubescencia gris en la cara inferior, formada por cilios que se insertan oblicuamente de atrás a adelante. Ojos subesféricos, negros, con estrías más claras, lampiños. Palpos maxilares en forma de plumeros; con la base amarillo-ferruginoso y en el centro adornados de un anillo más oscuro, para terminar en una expansión de pelos blancos. Palpos labiales con el 1^{er} y 2^o artejos levantados oblicuamente, y el 3^o un poco inclinado hacia abajo, en relación al eje que forman los otros dos. El 1^o, mucho más corto que el 2^o, y éste algo mayor que el 3^o, que termina afilado; revestidos por la cara externa de escamas ferruginosas, algo más amarillentas en la base y castañas en el ápice; el resto de la superficie de los palpos, blanquecina. Lengua bastante larga,

arrollada, con su tercio basal provisto de escamas blancas y 10 demás desnudo. Tórax bien desarrollado. Tégulas doradas. Patas anteriores con epífisis tibial. Patas intermedias provistas de un par de espolones apicales. Patas posteriores con un par de espolones de dicha clase y otro de intermedios. En todas ellas los internos son más largos que los externos. Tarsos de cinco artejos, con uñas normales. Todas las patas guarnecidas de pelitos o pelos escamiformes blanquecinos, salvo en la parte interna de los fémures y la interna de las tibias y los tarsos, que son morenos.

Envergadura, 21 mm. Anverso de las alas anteriores (fig. 1) parecido al de las *pinellus* (L.) (fig. 2). De color dorado, con dos manchas plateadas o „espejos“, análogos a los de dicha especie, pero la externa algo más alargada y con el borde de fuera mucho más oblicuo que en ella. Línea subterminal orientada como en aquel *Crambus*, pero plateada. Puntos en la extremidad de las venas y fimbrias análogos a los de *pinellus*. Anverso de las alas posteriores grisáceo. Reverso de las alas anteriores moreno, con la costa y el límite externo amarillentos. Reverso de las posteriores algo más claro que el anverso.

Ginopigio. (Lám. XI, fig. 10). Ostium con una amplia dilatación en forma de caperuza, provista de estrías o arruguitas horizontales y con la quitinización ligeramente más oscurecida en el ángulo. Muy diferente, por lo tanto, del ostium circular de *pinellus* (Lám. XI, fig. 11), cuyo diámetro es menor del tercio de la altura de dicha caperuza y está provisto en el extremo de su borde inferior de una punta triangular, resultando todo muy oscurecido. Ductus bursae en general bastante más ancho que en *pinellus* y, por 10 menos, dos veces más largo; con arrugas longitudinales en todo su recorrido; de sección variable según los respectivos trayectos y con tendencia a forma de cinta. Bolsa copulatriz doble, subesférica y no piriforme como en *pinellus*; con signum subcircular bastante parecido al de ésta“.

♂. Desconocido.

Holotipo ♀ de Mongrony a 1.600—1.665 m., en Gombreny, VII. 1919, provincia de Gerona (O. ROSSET leg.). En la colección R. AGENJO. Paratipo ♀ de los Puertos de Tortosa

a 1.000—1.100 m, provincia de Tarragona (E. BALAQUER leg.). En la colección del Instituto Municipal de Ciencias Naturales de Barcelona“.

***Catoptria corsicella* (DUPONCHEL, 1836)**

[Pl. XLI, fig. 2, pl. LVI, fig. 8, pl. LXXXI, fig. 7]

Crambus corsicellus DUPONCHEL. 1836, Hist. Nat. Lép. France. 10: 85, pl. 270, fig. 1.

Antennae brown, in male serrate from below, in female setaceous. Palps brown outside, white inside, whitish underneath. Frons slightly convex, smoothly rounded, white. Head white. Patagia white, brownish on sides. Thorax and tegulae brown. Length of fore wing 9,5—11,5 mm, width 3,5—4,2 mm. Costal margin almost straight. Apex delicately rounded. Outer margin slightly oblique, a little wavy. Ground of the fore wing brown, almost dull, more uniform and distinctly less vivid than in *C. pinella* (L.). Basal stripe as long as in *C. pinella* (L.). It is as well as the spot prolonging it much narrower than in *C. pinella* (L.). This spot is cut very obliquely at the outer side, much more so than in *C. pinella* (L.). Alongside inner edge of this spot a white, delicate, serrated line, which widens in its upper part and reaches costal margin. It has the character of an outer band angled at the level of the lower edge of white spot prolonging the basal stripe. Near apex a small white spot placed partially on cilia on apex. At the outer margin several dark dots. Cilia on the outer margin lustrous, grey-brownish, with a little darker basal streak, twice delicately interrupted above the middle of the wing width. Hind wings with delicate lustre, light-greyish, slightly darkened at margins. Cilia of hind wings whitish-grey, visibly paler than ground of wings.

Male genitalia [pl. XLI, fig. 2] very similar as in *C. pinella* (L.), however, distinctly smaller. Pars basalis sheet-like, somewhat more bluntly cut than in *C. pinella* (L.). The second (lateral) process on valva thinner than in *C. pinella* (L.). Aedeagus almost as long as the whole copulatory apparatus, not differentiated.

Female genitalia [pl. LVI, fig. 8] similar as in *C. pinella*

(L.). Gonapophyses anteriores wanting. Ductus bursae strongly sclerotized on its whole length. Bursa copulatrix transparent, distinctly smaller than in *C. pinella* (L.). One small, star-like signum.

Till now *C. corsicella* (DUP.) is known as a Mediterranean insular element. It is reported from Corsica and Sardinia. It appears in July and August.

Examined material:

Corsica: 1 female: „Corsica col de Vergio. 1400 m, 24 VIII 1932. coll. H. REISSER, Wien“, author's coll. 1 female: „Corsica“, author's coll.

Sardinia: 1 male: „Sardinia Aritzo, 7 VIII 1934. PREDOTA“, author's coll. 1 male: „Sardinia centr. Aritzo, 30 VII 1936, Cte. HARTIG leg.“, coll. TOLL. 1 male: „Sardinia Aritzo leg. H. G. AMSEL“, author's coll.

GROUP 5

Group type: *Catoptria permiaca* (PET.)

Only one species belongs here, viz. *C. permiaca* (PET.). Externally it is very similar to *C. pinella* (L.), however, it differs very much from it in the structure of its genitalia. In male pars basalis with secondary sharply pointed process. Aedeagus very short (0,5 mm long). Unfortunately I do not know the female of *C. permiaca* (PET.).

Catoptria permiaca (PETERSEN, 1924)

[Pl. XLI, fig. 4, pl. LXXXI, fig. 8]

Crambus permiacus PETERSEN, 1924, Lep. Fauna Estland 2: 386.

Male: antennae brown, unicolour, distinctly serrated from below. Palps dark brown outside, snow-white inside. Frons snow-white, slightly convex, rounded. Head snow-white. Patagia brownish-yellow on sides, snow-white in the middle. Thorax similarly coloured as patagia. Tegulae brownish-yellow. Length of the fore wing 8,5 mm, width 3,5 mm. Costal margin very

weakly convex, apex rounded, outer margin very slightly wavy below the apex. Ground of the fore wing dull, yellow, darkened brown in places, with snow-white design. Basal stripe and oval spot prolonging it of a shape and size similar as in *Catoptria pinella* (L.). Area between basal stripe and oval white spot dark brown. White oval spot bordered by dark brown from outer side and above. Line-like border of outer edge of the oval spot connected with indistinct oblique brown line which runs from costal margin. Small dark dots at the outer margin well developed. Cilia on the outer margin with strong lustre, brown, beneath apex three times very delicately and indistinctly interrupted by white. Hind wings almost dull, brownish-grey with a little paler cilia.

This species is very similar to *Catoptria pinella* (L.), but it is very easily distinguishable from it by the lack of the strong protuberance on frons, which appears in *C. pinella* (L.). Besides, the fore wing in *C. permiaca* (PET.) is a little wider and shorter than in *C. pinella* (L.). In spite of such a great similarity these two species have so many differences in their genitalia, that I place them in two different groups.

Male genitalia [pl. XLI, fig. 4]: uncus slender, narrow, pointed at the end. Gnathos also narrow, slender, distinctly at the end widened, while in *C. pinella* (L.) it is pointed. Pars basalis in the shape of a rather short, not very wide sheet, not separated from valva but distinctly more sclerotized. Near its end pars basalis presents a secondary sharply pointed small process. Second, lateral process of valva well developed, but very much smaller than in *C. pinella* (L.) and *C. corsicella* (DUP.). Aedeagus very short, relatively wide. It is visibly wider than aedeagus in *C. pinella* (L.). It is 0,5 mm long and 0,2 mm wide, while in *C. pinella* (L.) aedeagus is 1,4 mm long and 0,15 mm wide.

Catoptria permiaca (PET.) is thus far known from Ural and Manchuria. Probably it replaces *C. pinella* (L.) Eastwards from Ural.

Examined material:

Manchuria: 3 males: „Manchuria Kaolingtsu Station (Prov. Kirin), VII 1940“, coll. TOLL and author's coll.

GROUP 6

Group type: *Catoptria caucasica* (ALPH.)

Only one species belongs here. Externally it is similar to the species of such groups as *Catoptria pinella* (L.) or *C. permianica* (PET.), but it differs from them in its male genitalia. Pars basalis strongly developed as a narrow sheet with a strong pointed hook at its end.

***Catoptria caucasica* (ALPHÉRAKY, 1877)**

[Pl. LXII, fig. 5, pl. LXXXI, fig. 4]

Crambus causicus ALPHÉRAKY, 1877, Trudy Russ. ent. Obsč. 10: 27

A species rather similar to *Catoptria pinella* (L.). Apex somewhat pointed while in *C. pinella* (L.) it is rounded. Fore wing relatively narrower than in *C. pinella* (L.). Ground of the fore wing rusty-brown. Basal stripe and the spot prolonging it snow white. Upper outer end of the spot prolonging the basal stripe points distinctly above the middle of wing.

Dark dots at the outer margin reduced. Cilia on the outer margin unicoloured, lustrous. Hind wings snow-white with similarly coloured cilia.

Male genitalia [pl. LXII, fig. 5]: uncus slender, pointed. Gnathos as long as uncus, curved at the end. Pars basalis developed as a narrow sheet. It ends by a widening and a strong, curved, pointed hook. Second (lateral) process on valva strongly developed, pointed. Aedeagus visibly shorter than the whole copulatory apparatus, narrow, straight. It has small thorns at the end. Cornuti absent.

C. caucasica (ALPH.) thus far is known as a Caucasian endemit.

Examined material:

1 male (paratype): „Caucasus sept. ALPH[ÉRAKY]“, coll. Zoological Museum of the Humboldt University in Berlin.

GROUP 7

Group type: *Catoptria margaritella* (DEN. & SCHIFF.)

I include only one species here viz. *C. margaritella* (DEN. & SCHIFF.). Externally it is similar to *C. pyramidella* (TREITSCH.) and *C. spatulella* (TRTL.). On the fore wing appears a long, not interrupted white basal stripe. In male genitalia pars basalis is developed in the shape of a wide sheet.

***Catoptria margaritella* (DENIS & SCHIFFERMÜLLER, 1775)**

[Pl. XXXVIII, fig. 4, pl. LVI, fig. 5, pl. LXXIX, fig. 5—8]

? *Tinea margaritella* DENIS & SCHIFFERMÜLLER, 1775, Syst. Verz. Schmett. Wien. Geg.: 134.

Phalaena Tinea Margaritella HÜBNER, 1787, Beitr. Gesch. Schmett. 1/2: 29, pl. 4, fig. Z.

Tinea margaritella HÜBNER, 1796, Samml. Eur. Schmett.: 25, pl. 6, fig. 39.

Chilo Margaritellus GERMAR & ZINCKEN, 1817, Magazin Entomol. 2: 79.

Catoptria Eumargaritalis HÜBNER, 1825, Verz. Bek. Schmett.: 365.

Crambus margaritellus STEPHENS, 1834, Illustr. Brit. Entomol. *Hau-stellata* 4: 325, pl. 40, fig. 2.

Antennae unicolour, light brownish-grey, in male serrate in female setaceous. Palps pale to dark brown snow-white from above and inside. Frons slightly convex, rounded, snow-white. Head, patagia and thorax white. Tegulae yellow. Length of fore wing varies from 8,7 to 11 mm, width from 3 to 4,8 mm. Fore wing in the female relatively more slender, narrower than in the male. Costal margin somewhat convex, in female more visibly than in male. Apex in male rounded, in female somewhat more pointed. Outer margin in male visibly bent outwards, in female almost straight. Ground of fore wing of the typical form yellow, darkened brown above and below basal stripe. Basal stripe snow-white, at the wing base narrow, then visibly widened, pointed at its end. It reaches near the outer margin, usually with visible small tooth below. Small dark dots at the outer margin well visible. Sometimes the whole outer

margin darkly bordered. Cilia on the outer margin unicolour, not interrupted by white streaks, with somewhat paler streak of basal scales. Cilia with strong, almost metallic lustre. Hind wings almost dull, pale to dark grey, with margins bordered darker. Cilia of hind wings pale whitish-yellowish, distinctly lighter-coloured than ground of wing.

ab. *flavescens* (REUTTI, 1898).

Crambus margaritellus ab. *flavescens* REUTTI, 1898, Uebersicht Lep. Fauna Baden: 161.

Crambus margaritellus f. *gilveolellus* HAUDER, 1918, Ent. Zeit. Frankfurt a. M. 26: 102.

Crambus margaritellus f. *rufellus* OSTHELDER, 1952, Nachr. Bl. Bayer Ent. 1: 12.

The specimens with paled yellow ground of the wings and yellowish basal stripe. The form *rufellus* OSTH. seems to be identical with ab. *flavescens* (REUTTI) and it does not deserve an separate name. I have seen several cotypes of this form and did not find any important featur distinguishing these two forms.

ab. *tenuivittella* (OSTHELDER, 1952).

Crambus margaritellus f. *tenuivittellus* OSTHELDER, 1922, Nachr. Bl. Bayer. Ent. 1: 12.

The specimens in which the basal stripe is narrowed and a little similar as in *C. furcatella* (ZETT.). From Kochel (Bavaria).

ab. *dilucescens* (OSTHELDER, 1952).

Crambus margaritellus f. *dilucescens* OSTHELDER, 1952, Nachr. Bl. Bayer. Ent. 1: 11.

The specimens with visibly cleared yellow ground of the fore wings. From Kochel, Bavaria.

ab. *hoermammeri* (OSTHELDER, 1939).

Crambus margaritellus mod. *hoermammeri* [sic!] OSTHELDER, 1939, Mitt. Münch. ent. Ges. 39: 14.

The specimens with basal stripe of the fore wings bordered with black. From Haag a. d. Amper.

mod. *montanicella* (BLESZYŃSKI, 1948).

Crambus margaritellus var. *montanicellus* BLESZYŃSKI, 1948, Acta Physiogr. Pol. 11:6.

Crambus margaritellus f. *vulpinellus* OSTHELDER, 1952, Nachr. Bl. Bayer. Ent. 1: 11.

It is difficult to state whether this form is only an ecological modification or a geographical subspecies. I described this form from wet meadows at the base of Tatry Mts. (ca 900 m). It occurs numerously also on the peat-moors in Podhale (ca 600 m). This form is visibly larger than the typical one, and has distinctly darkened brown fore wings. This darkening is better developed in males than in females. Above the dorsal margin the ground is not darkened. OSTHELDER (1952) described the form *vulpinellus* from moors of Bavaria. The specimens of this form according to this author have the fore wings uniformly darkened brown, however, having examined several cotypes of this form I stated, that these specimens are identical or almost identical with the specimens of mod. *montanicella* (BLESZ.). Therefore I think that the darkened form of *C. margaritella* (DEN. & SCHIFF.) is typical for the wet regions, and it is only an ecological modification and not a geographical subspecies. I have found this form also in the wet forests of Northern Poland. I have also such darkened specimens of the species in question from Sudety Mts. Uniformly dark specimens of *C. margaritella* (DEN. & SCHIFF.) are known from England.

It is not quite clear what species was described by DENIS & SCHIFFERMÜLLER (1775); either this which we name at present *C. margaritella* or *C. pyramidella* (TREITSCH.)? Many authors give as the author of *C. margaritella* HÜBNER and not DENIS & SCHIFFERMÜLLER. *Tinea margaritella* DEN. & SCHIFF. is cited by some authors, e. g. ZELLER in the synonymy of the species *C. pyramidella* (TREITSCH.). This is probably why many authors give HÜBNER as the author of the species in question. It should be mentioned that HÜBNER (1825) writes: „*Catoptria Eumargaritalis* T. *margaritella*...“. This may mean that HÜBNER realized that his *Tinea margaritella* from „Sammlung Europäischer Schmetterlinge“ does not correspond with the species described by DENIS & SCHIFFERMÜLLER

and he gave for this species a new name *Catoptria eumargaritalis* HBN. But, on the other hand, HÜBNER should cite also in his „Verzeichniss“ DENIS & SCHIFFERMÜLLER'S species which he did not. But even in case if DENIS & SCHIFFERMÜLLER'S name *Tinea margaritella* would concern the species *C. pyramidella* (TREITSCH.) I think that the present nomenclature has lasted long enough and for the species in question the name *C. margaritella* (DEN. & SCHIFF.) should be considered as correct.

C. margaritella (DEN. & SCHIFF.) is a species externally similar to two species of the *C. permutatella* (H.-S.) — group viz. *C. pyramidella* (TREITSCH.) and *C. spatulella* (TRTL.). The species in question can be easily distinguished from *C. pyramidella* (TREITSCH.) by the coloration of cilia on the outer margin of the fore wing. Cilia of *C. margaritella* (DEN. & SCHIFF.) are unicolour while in *C. pyramidella* (TREITSCH.) they are several times interrupted by white. Sometimes these white streaks tend to disappear, however, always at least one or two indistinct white streaks are developed. The species in question is distinguished from *C. spatulella* (TRTL.) by the shape of the basal stripe of the fore wing. In *C. margaritella* (DEN. & SCHIFF.) this stripe is distinctly narrowed at its end and visibly more obliquely truncated than in *C. spatulella* (TRTL.) (and also in *C. pyramidella* (TREITSCH.)). Cilia on the outer margin of the fore wing of *C. spatulella* (TRTL.) are similarly coloured as in *C. margaritella* (DEN. & SCHIFF.).

Despite a strong external similarity to two species of the group *C. permutatella* (H.-S.), the species in question on account of considerable differences in genitalia, presents a distinct group.

Male genitalia [pl. XXXVIII, fig. 4]: uncus pointed, however, without small prong as in the species of the *C. permutatella* (H.-S.) — group. Gnathos ended by triangular widening, while in *C. pyramidella* (TREITSCH.) and species related to it gnathos ends with a small hook. Pars basalis is developed in the shape of a wide strong sheet, not separated from the valva. Valva rather pointed. Saccus normally developed, oval. Aedeagus short, distinctly shorter than the whole copulatory apparatus. It is armed at its end with a strong sclerotized ring which forms a strong dorsal prong. Cornuti absent.

Female genitalia [pl. LVI, fig. 5]: gonapophyses anteriores wanting. Ostium bursae of the shape of a deep rounded cup. Ductus bursae very short, transparent. The strongly sclerotized ostium bursae very sharply bordered from ductus bursae. Bursa copulatrix transparent with one, small, star-like signum.

C. margaritella (DEN. & SCHIFF.) is thus far known from Europe and from Northern Africa. It appears from June to August in the lowlands and sub-montane regions.

Examined material:

France: 3 males: „Vosges Ventrou et environs, 10 VI 1940, 600—800 m, CH. FISCHER“, author's coll.

Great Britain: 2 males: „Port Appin Argyll, 4 VIII 1951“, author's coll.

Denmark: 2 males: „Böllmore, 27 VII 1952, LANGER“, author's coll.

Germany: 43 males and females from Kochel (Bavaria), VI—VII 1938—1950, leg. L. OSTHELDER and Dr. H. WAGNER, (typical spec. and ab. *tenuivittella* (OSTH.) — cotypes, ab. *rufella* (OSTH.) — cotypes, ab. *vulpinella* (OSTH.) — cotypes), author's coll.

Austria: 1 female: „29 V 1945, Klagenfurt Kärnten“, author's coll.

Switzerland: 1 male: „F. 1869, Engadin Semadeni“, author's coll.

Italy: 1 male and 1 female: „Mezzolombardei, leg. DANNEHL“, coll. TOLL.

Poland: Several spec. from environs of Kraków, VI 1948, author's coll. 196 males and females of mod. *montanicella* (BLESZ.) from Zakopane (Tatry Mts. 900 m), and from Podczerwone, distr. Nowy Targ, VI—VII 1946—1950, author's coll. 1 male: „Skotniki pow. Końskie, leg. RAZOWSKI“, author's coll. 9 males and females from Łańsk—Rybaki, distr. Olsztyn, 26 VII 1952, author's coll.

USSR: 2 males: „Babińce p. Krzywcze, 7 VII 1937, leg. S. TOLL“ (Western Podolia), coll. TOLL.

GROUP 8

Group type: *Catoptria furcatella* (ZETT.)

I include only one species here viz. *C. furcatella* (ZETT.). In habitus it is similar to the species of the *C. radiella* (HBN.) — group. In male genitalia pars basalis is developed as strong short fold. Aedeagus with cornuti. In female ostium bursae cup-like.

Catoptria furcatella (ZETTERSTEDT, 1840)

[Pl. XXXVIII, fig. 3, pl. LVII, fig. 1, pl. LXXXI, fig. 1—3]

Chilo furcatellus ZETTERSTEDT, 1840, Insecta Lapponica: 995.

Crambus Radiolellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 62, Sppl. 4.

Crambus Lapponicellus STANTON, 1849, Syst. Catal.: 1.

Crambus furcatellus ZELLER, 1863, Chil. Cramb. Gen. Spec.: 35.

Antennae brown, in male very slightly serrated from below, in female setaceous. Palps brown, whitish inside in females. Frons slightly convex, rounded, dark brown. Patagia, head and tegulae dark red-brownish. Length of the fore wing varies from 9,5 to 11,5 mm, width 3,5—4,5 mm. Costal margin straight, apex slightly rounded in male, more pointed in female; outer margin rather straight. Fore wing dull, dark red-brown. Narrow, white basal stripe appears. It is widened in the middle of the wing, slightly in male and more visibly in female, in both sexes delicately bifurcated, pointed near the end. It reaches distinctly beyond the middle of wing but is considerably remote from outer margin. Cilia on the outer margin with slight lustre, with darker streak of basal scales. Cilia in male dark red-brown, in female whitish. Hind wing dark, grey-brown, dull. Cilia of the hind wing with a very slight lustre, paler than ground of wing.

The specimens from the Tatry Mts. are distinctly larger than the Alpine ones. The Alpine form has a somewhat narrower basal stripe on the fore wings. I have only one female from Scandinavia, from where *C. furcatella* (ZETT.), was described and that is why I cannot decide if the form from Alps or Tatry Mts. is more related to the typical one.

Male genitalia [pl. XXXVIII, fig. 3]: uncus and gnathos long, slender. Uncus pointed near the end, slightly bent downwards. Gnathos terminated with a triangular widening. Saccus oblong, more or less oval. Pars basalis of the shape of a strongly developed, very sclerotized sheet separated from valva before the middle of the latter. Second lateral process of valva present. Aedeagus slender with several thin, long cornuti.

In female genitalia [pl. LVII, fig. 1]: gonapophyses anteriores strongly reduced, they appear as blunt short processes of lamella subgenitalis. Lamella subgenitalis of the shape of a deep cup, very much sclerotized. Ductus bursae thin, strongly sclerotized. It has a ribbed surface almost to its end. Bursa copulatrix transparent. One star-like signum.

C. furcatella (ZETT.) is a European endemic, known as a Boreo-Alpine species from Scandinavia, mountains of Great Britain, Alps and Tatry Mts. In Tatry Mts. it appears above 1500 m but it comes to light already on 900 m. It flies on high mountain ridges, it rests gladly on *Pinus mughus* SCOP. In Alps it reaches ca 3000 m. It occurs in July and August. The caterpillar feeds on moss.

Examined material:

Scandinavia: 1 female: „Karvonen“, „Pummanki“, author's coll.

Alps: 2 males: „Tirol Wildgrat, 2700 m, 15 VII 1947“, author's coll. 1 male: „Tirol Stubai, 2500 m Hoher Burgstall, 16 VIII 1941, J. KLIMESCH“, author's coll. 1 male: „Carinthia, 2600 m, Gr. Glockner Gams Grube A. IX 1943, J. KLIMESCH“, author's coll. 1 male: „27 VII, Gr. Fluss Glocknergeb., 1800“, author's coll.

Tatry Mts.: 27 males and females from Liliowe — 1950 m, Zawrat — 2000 m, Dolina Pięciu Stawów — 1700 m, Przełęcz Pyszniańska — 1700 m, Żółta Turnia — 1900 m, 1 VII — 26 VII 1946—1954, author's coll.

GROUP 9

Group type: *Catoptria maculalis* (ZETT.)

Only one species belongs here viz. *C. maculalis* (ZETT.). It is very characteristic and differs in its habitus from other related species of the genus in question. It has no white basal stripe on the fore wing, but several white spots, and an indistinct white outer band. Genitally this species is related somewhat to *C. furcatella* (ZETT.) on one hand, and to *C. radiella* (HBN.) on other hand. In male genitalia pars basalis is developed a little similarly as in *C. furcatella* (ZETT.). Female genitalia are similar as in *C. radiella* (HBN.).

Catoptria maculalis (ZETTERSTEDT, 1840)

[Pl. XXXIX, fig. 5, pl. LIII, fig. 6, pl. LXXXII, fig. 1—3]

Scopula maculalis ZETTERSTEDT, 1840, *Insecta Lapponica*: 971.*Crambus cacuminellus* ZELLER, 1850, *Zeit. Ent. Breslau* 4: 35.*Crambus maculalis* ZELLER, 1863, *Chil. Cramb. Gen. Spec.*: 28.

Antennae dark brown, in male serrate from below, in female setaceous. Palps brown with whitish blotches from above. Frons dark brown, slightly convex, rounded. Head, patagia, tegulae, and thorax dark brown. Length of the fore wing varies from 8,5 to 11,5 mm, width from 3,8—4,2 mm. Females are generally somewhat larger than males. Fore wing relatively wider than in other species of the genus *Catoptria* HBN. Costal margin slightly convex, apex rather rounded, outer margin very delicately bent outwards, slightly oblique. Ground of the fore wing black-brown. Design white, consists of the outer band and irregular spots. Outer band in the upper part arched toward outer margin, slightly wavy, in the lower part vertical to the dorsal margin, wider than in the upper part. In the middle of the wing more or less developed white spots, the central one of which is the largest, while those below costal margin and above dorsal margin are generally less developed. The spot above the dorsal margin is situated a little nearer to base of wing than the one below the costal margin. These spots resemble sometimes a wide, broken transverse band. Further whitish blurs are near the base of the wing. Cilia on the outer margin with very slight lustre, grey-brown, sometimes slightly paled to white in upper part of wing. Hind wing dull, dark grey-brown. Cilia with several whitish patches.

The specimens from Tatry Mts. and Sudety Mts. are somewhat bigger than the Alpine ones, with better developed white spots on the fore wings. Two Scandinavian specimens which I examined approach externally rather the Alpine ones than those from Tatry Mts. and Sudety Mts. Unfortunately I have still not enough material to be able to state whether *C. maculalis* (ZETT.) presents a distinct geographical race in Tatry Mts.

Male genitalia [pl. XXXIX, fig. 5]: uncus and gnathos of similar length. Uncus pointed, gnathos terminated by a trian-

gular widening. Pars basalis strongly developed, short, wide, rather sheet-like. The second lateral process of valva distinctly developed. Valva rounded. Aedeagus very short, relatively wide, unarmed, without cornuti.

In female genitalia [pl. LIII, fig. 6] lamella subgenitalis very slightly widened in the lower part, strongly accreted to ostium brusae. Ostium bursae funnel-like, wider than the rest of ductus bursae, but not strongly distinguished from it. Ductus bursae behind ostium bursae strongly sclerotized with longitudinal ribbing, further on (till bursa copulatrix) transparent. Bursa copulatrix transparent, with one star-like, small signum.

C. maculalis (ZETT.) is a Boreo-Alpine species known till now only from Europe. It is distributed in Scandinavia, Alps, Sudety Mts. and Tatry Mts. It occurs above the forest line in the *Pinus mughus* SCOP. — zone.

Examined material:

Scandinavia: 1 male: „Tromsdal, 6 VII 1880“, author's coll. 1 female: „Tb. Pyhähäkki, 1937, W. HACKMANN“, author's coll.

Alps: 2 males: „Tirol Gobenerh., 1900 m, 9 VII 1944“, author's coll.

Sudety Mts.: 2 males and 1 female: „Riesengebirge, 21 VII 1933, HAASE“, author's coll.

Tatry Mts.: 3 females: „Tatry Pyszna, 1700 m, 2—25 VII 1949—1950, leg. BŁESZYŃSKI“, author's coll.

GROUP 10

Group type: *Catoptria zermattensis* (FREY)

Two very closely related species belong here, *C. zermattensis* (FREY) and *C. müller-rutzi* (WEHRLI). Externally they are delusively similar. They are characteristic by the presence of a dark inner band, a white outer one, and a strongly reduced basal stripe. In male genitalia pars basalis is developed in the form of a strong, thick, rather short process, somewhat similar as in *C. languidella* (ZELL.). The second lateral process well developed.

C. zermattensis (FREY) and *C. müller-rutzi* (WEHRLI) present a group analogous to *C. permutatella* (H.-S.), in which the

species are externally delusively similar, while their genitalia show considerable differences.

It is not easy to establish the systematic position of this group. I have placed it beside *C. digitella* (H.-S.) because of some features analogous in both groups. The species show similarly strongly conical foreheads and similar sexual dimorphism in the shape of wings.

***Catoptria zermattensis* (FREY, 1870)**

[Pl. XL, fig. 2, pl. LVII, fig. 2, pl. LXXXII, fig. 5—6]

Crambus zermattensis FREY, 1870. Mitt. Schweiz. Ent. Ges. 3: 244, 478.

Antennae brown, in male serrate, in female setaceous. Palps brown, from inner side, from above and at the underside of the base white. Frons whitish, with sharp, pointed, strongly conical protuberance. Head white. Patagia brown on sides, whitish in the middle. Thorax brown, whitish in places. Tegulae brown-white. Length of male's fore wing 13 mm, female's 12 mm [SPULER (1910) gives the length of the wing of *C. zermattensis* (FREY) as 13—15 mm. WEHRLI (1924) writes that according to MÜLLER-RUTZ the specimens of *C. zermattensis* (FREY) have following lengths of the fore wing: males 11 mm and females 10 mm. It is evident that this feature is rather variable here]. Width of the fore wing is 5 mm in males, and 4,3 mm in females. Costal margin of the fore wing in male rather straight, in female visibly bent outwards at the base, at the apex more straight than in male. Apex rounded, in male more delicately than in female. Outer margin in female somewhat more oblique than in male. Fore wing in female less widening outwards than that in male. Ground of the fore wing dull, brown, whitish at places, with white design. Basal stripe very indistinct, white, divided lengthwise by a streak of scarce brown scales, narrow, torn at the end, broken broadly by the inner band. Dorsal margin whitish at the base. Above this and below the basal stripe lies a somewhat blurred white streak, darkened in its inner part by the inner band. Inner band brown, angled below the costal margin, strongly oblique.

toward base of wing. Outer band white, arched strongly toward outer margin, with a small tooth above dorsal margin. The veins between outer band and outer margin more or less distinctly marked white. Several small black dots at the outer margin. Cilia on the outer margin brownish, with slight lustre, basal streak with slight metallic lustre, lengthwise dividing line whitish. Cilia several times indistinctly interrupted by whitish. Hind wings with slight lustre, light brown. Cilia of hind wings white with brownish basal streak.

Male genitalia [pl. XL, fig. 2]. Uncus narrow, visibly pointed. Gnathos narrow, slightly widened at the end. Pars basalis developed as a thick process projecting from valva. Pars basalis rather rounded at the end, smooth. The second process on valva well developed, situated laterally. Aedeagus somewhat shorter than the whole copulatory apparatus, armed at the end with a strong ventral hook with long base.

Female genitalia [pl. LVII, fig. 2]: gonapophyses anteriores completely reduced. Lamella subgenitalis strongly fused with ostium bursae. Ostium bursae funnel-like, not distinguishable from ductus bursae. An additional plate appears on lamella subgenitalis. Ductus bursae strongly sclerotized to the half of its length, slightly ribbed, further on somewhat less sclerotized but less transparent than bursa copulatrix. On bursa copulatrix one star-like signum.

Catoptria zermattensis (FREY) is an Alpine endemic, occurring the Wallis-Alps and Tessin-Alps. It appears in July and August very high, about 3000 m.

Examined material:

Alps: Several males from Zermatt, coll. I. Z. P. A. S., Warszawa, and author's coll. 2 females: „FREY coll., 1890“, author's coll.

Catoptria müller-rutzi (WEHRLI, 1924)

[Pl. XL, fig. 1, pl. LXXXII, fig. 4]

Crambus zermattensis subsp. *müller-rutzi* WEHRLI, 1924, Dtsch. Ent. Zeit. Iris 38: 96.

Antennae, palps, head, patagia, thorax, and tegulae similarly coloured as in *C. zermattensis* (FREY). Frons also with strong

conical protuberance. Length of fore wing 12,5 mm, width 5 mm [according to WEHRLI (1924) the types had the length of the fore wing 11 to 11,5 mm]. Shape of the fore wing similar as in of *C. zermattensis* (FREY). Ground of the fore wing darker than in *C. zermattensis* (FREY), coloured blackish-brown. Design delusively similar as in *C. zermattensis* (FREY). Black spots at the outer margin more strongly developed than in *C. zermattensis* (FREY), almost merged into one line. According to WEHRLI's original description the species in question lacks the tooth on the white outer band above the dorsal margin. In the specimen which I investigated this tooth is very distinct. Cilia coloured similarly as in *C. zermattensis* (FREY). Hind wings slightly lustrous, greyish-brown, darker than in *C. zermattensis* (FREY). Cilia of the hind wings white, slightly darkened at the ends with dark streak of basal scales.

Male genitalia [pl. XL, fig. 1]: closely similar as in *C. zermattensis* (FREY). Uncus pointed, somewhat slimmer than in *C. zermattensis* (FREY). Gnathos similar as in *C. zermattensis* (FREY). Pars basalis better developed, thicker, wider at the end, slightly serrated, while *C. zermattensis* (FREY) lacks this serration. The lateral process on valva similarly developed as in *C. zermattensis* (FREY). The most important genital difference between these two species is in aedeagus. In *C. müller-rutzi* (WEHRLI) aedeagus is not armed, while *C. zermattensis* (FREY) has it armed by a ventrally situated thorn.

C. müller-rutzi (WEHRLI) was described as a subspecies of the previous species. Because of distinct differences in the structure of their male genitalia it should, however, be treated as a distinct species. It is possible that *C. müller-rutzi* (WEHRLI) was already treated as species bona by WEHRLI himself because the specimen investigated by me has the label „*Crambus müller-rutzi* WRLI. [det.] WEHRLI“.

C. müller-rutzi (WEHRLI) was described from the specimens caught on Mont Gelas (3150 m) and Cima d'Aegentera (3300 m, Sea-Alpes). The specimen which I investigated is from Zermatt, that is from the region where *C. zermattensis* (FREY) occurs.

Examined material:

1 male: „Zermatt Hörnli, ca 2800 m, 4 VIII 1932, Dr. GIESE“, „*Crambus müller-rutzi* WRLI. [det.] dr. WEHRLI“, coll. TOLL.

GROUP 11

Group type: *Catoptria languidella* (ZELL.)

Not numerous group. I place here only one of the European species, *C. languidella* (ZELL.). Externally it differs from all other species of the genus *Catoptria* HBN. Its fore wings are unicolour, white without any traces of design, similarly as typical specimens of *Crambus perlellus* (SCOP.). Its genitalia does not differ very much from other groups of the genus *Catoptria* HBN. In male genitalia pars basalis is well developed as a short process, detached from valva near its base. There appears the second appendage on valva. Aedeagus provided at the end with a prong. In female genitalia lamella subgenitalis not strongly accreted to ostium bursae. Gonapophyses anteriores wanting.

***Catoptria languidella* (ZELLER, 1863)**

[Pl. XXXIX, fig. 3, pl. LVIII, fig. 4, pl. LXXXII, fig. 7—8]

Crambus languidellus ZELLER, 1863, Chil. Cramb. Gen. Spec.: 49.

Antennae greyish, unicoloured, in male slightly serrate from below, in female setaceous. Palps greyish outside, whitish inside. Frons and head white. Frons slightly convex, smooth. Patagia, thorax, and tegulae silvery-white. Length of fore wing varies from 9,5 to 10,5 mm, width in male 3,5—4 mm, in female 3 mm. Fore wing in female narrower, with more pointed apex and more oblique outer margin, than in male. Fore wing lustrous, silvery-white without any design, underneath costal margin sometimes darkened greyish. Cilia on the outer margin unicoloured, white. Hind wings distinctly darker than fore ones, dull, grey. Cilia of the hind wings white, lustrous.

Male genitalia [pl. XXXIX, fig. 3]: uncus narrow, slender, pointed. Gnathos also narrow, terminated with small triangular widening. Saccus somewhat elongated. Pars basalis short, pointed, distinctly separated and bordered from valva. Second lateral process well developed. Valva rounded. Aedeagus

visibly shorter than the whole copulatory apparatus, terminated with distinct prong.

In female genitalia [pl. LVIII, fig. 4] lamella subgenitalis very narrow, rather weakly accreted to the ostium bursae. Ostium bursae deep, cup like, strongly sclerotized to the half of its length, further transparent. Ductus bursae behind ostium bursae strongly sclerotized, then transparent; it is rather short, straight. Bursa copulatrix transparent, with one star-like small signum.

Catoptria languidella (ZELL.) is a montane species distributed in the Alps (Styria), mountains of the Balkan Peninsula, Caucasus and Central Asia.

Examined material:

Italy: 1 male: „Trento Lago Ritorto, 22 VII 1946, A. FIORI“, author's coll.

Switzerland: 1 female from Alps, coll. I. Z. P. A. S., Warszawa.

Austria: 1 male: „Styria Bösenstein, 1800 m, 21 VII 1941, J. KLIMESCH“, author's coll.

Albania: 1 male: „Akad. Balk. Exp. CSIKI, 1918, Albania Mts. Korab“, author's coll.

GROUP 12

Group type: *Catoptria digitella* (H.-S.)

I include two species here, viz. *C. digitella* (H.-S.) and *C. hospitali* (AGENJO). On the fore wing occurs a very narrow basal stripe or transverse bands. In the male genitalia pars basalis strongly developed, of the shape of a wide fold, somewhat similar as in *C. laevigatella* (LED.). In female genitalia ostium bursae strongly widened at its end, weakly sclerotized.

Catoptria digitella (HERRICH-SCHÄFFER, 1849)

[Pl. XL, fig. 5, pl. LVII, fig. 3, pl. LXXXIII, fig. 1]

Crambus petrificellus DUPONCHEL, 1836, Hist. Nat. Lép. France **10**: 132, pl. 273, fig. 8 a, b. [nom. praeoc.].

Crambus Digitellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. **4**: 116, Sppl. 203.

Crambus petrosellus DE JOANNIS, 1915, Ann. Soc. ent. France **84**: 88
(nom. nov. pro *petrificellus* DUF. nom. praeoc.).

Antennae in male serrate, brown; in female setaceous, whitish from above. Palps brown outside, white inside. Frons white, pointed, with strong conical protuberance. Head white. Patagia brown on sides, white in the middle. Thorax in male brownish, in female whitish. Tegulae brownish, at the base whitish. Length of the fore wing varies from 12 to 15 mm, width in male 6 mm, in female 4 mm. Fore wing in female less widened distally than in male, with costal margin and dorsal margin almost parallel. In male costal margin straight, in female distinctly curved. Apex in the male more rounded than in the female. Outer margin delicately bent outwards in male less oblique than in female. Fore wing slightly lustrous with light greyish ground. A very narrow whitish basal stripe contrasting with ground of wing. It is forked at the end and reaches about $\frac{3}{4}$ of wing length. Around the stripe a more or less intensive olive blackish suffusion. On the outer margin several dark dots or short lines. Cilia on the outer margin light greyish, slightly lustrous, sometimes with delicate dark longitudinal dividing line. Hind wings grey-whitish with slight lustre and whitish cilia.

Male genitalia [pl. XL, fig. 5] somewhat similar as in *C. laevigatella* (LED.). Uncus and gnathos slender. Uncus pointed. Gnathos terminated by a triangular widening characteristic for many species of the genus *Catoptria* HBN. Pars basalis well developed as a large, rather pointed sheet with wavy dorsal edge. Second lateral process on valva not well developed, situated before the middle of valva, somewhat nearer to its base. Aedeagus as long as the whole copulatory apparatus with 5 linearly situated cornuti.

In female genitalia [pl. LVII, fig. 3] gonapophyses anteriores absent. Lamella subgenitalis strongly accreted to ostium bursae. Ostium bursae deep, in its lower part widened bag-like; in the upper part strongly sclerotized, in the lower one transparent. Its strong sclerotization becomes weaker gradually, without distinct border. Ductus bursae distinctly narrower than the lower bag-like part of ostium bursae, somewhat shorter than ostium bursae, rather weakly sclerotized, slightly wrinkled. Bursa copulatrix transparent, with one star-like signum.

C. digitella (H. S.) was reported till now under two names: *Crambus digitellus* H.-S., and *Crambus petrosellus* DE JOAN. or *C. petrificellus* DUP. *C. digitella* (H.-S.) was considered as a much rarer species than *C. petrosellus* DE JOAN. Both names were synonymized by MARION (1949). He showed that they refer to one species *C. digitella* (H.-S.). DE JOANNIS gave in 1915 nomen novum *Crambus petrosellus* for *Crambus petrificellus* DUP. because HÜBNER described in 1796 under the name *Tinea petrificella* for the second time *C. combinella* (DEN. & SCHIFF.) and therefore the name *petrificellus* DUP. is preoccupied. DUPONCHEL described a species in 1836 under the name *Crambus petrificellus* which was again described in 1849 by HERRICH-SCHÄFFER as *Crambus digitellus*. Therefore *Crambus petrosellus* DE JOAN. is a synonym of *Crambus digitellus* H.-S.

Catoptria digitella (H.-S.) is a montane West European element known from the Central Massive in Southern France and from the Pyrenees. It occurs in July and August. *C. cili-ciella* (REB.), *C. pseudociliciella* sp. n., and *C. laevigatella* (LED.) are the most related to *C. digitella* (H.-S.).

Examined material:

Pyrenees: 1 male and 1 female: „Gèdre, 19 VIII“, author's coll. 2 males: „Gèdre Pyren. 13 VIII 1896“, coll. TOLL. 4 spec. from Caunterets, VII, coll. I. Z. P. A. S., Warszawa. 1 male: „VII 1894, Pyr. orient.“, author's coll. 1 male: „Pyrénées Orientales Mt. Canigou, 1500—2500 m, 7—11 VIII 1951, leg. Dr DE LATTIN“, author's coll.

***Catoptria hospitali* (AGENJO, 1952)**

Crambus hospitali AGENJO, 1952, Eos, 28: 316, pl. 7, figs. 1—4, 9—13, 15.

Grambus [sic!] *Marteni* HARTIG, 1953, Boll. Ass. Rom. Ent., 8: 14, fig. 1.

It is difficult to decide whether *C. hospitali* (AGENJO) is a distinct species or only a subspecies of *C. digitella* (H.-S.). The genitalia of both these forms — according to the drawings added to the description of *C. hospitali* (AGENJO) — show no differences. However, both forms differ very distinctly in the fore wing design. In *C. digitella* (H.-S.) there is on the fore wing a narrow basal stripe, forked by white lines running on the veins; no transverse bands. Again, in *C. hospitali* (AGENJO), as seen on AGENJO'S photographs, there are very distinct

transverses bands, an outer and an inner one. They are both visibly darker than the ground colour. In upper half of wing outer band forms a strong bend directed towards termen, below it is strongly bent to the wing base. Below costal margin the inner band is angled and very oblique.

Although there are no genital differences between *C. digitella* (H.-S.) and *C. hospitali* (AGENJO), they should rather be considered as separate species. There are many examples in the genus *Catoptria* HBN., where species differ only by colour and design of the wings. It should be noted that the female of *C. hospitali* (AGENJO) is unknown.

I had no comparative material of *C. hospitali* (AGENJO) to my disposition. *C. hospitali* (AGENJO) was described from Pyrenees (Picos de Europa).

AGENJO (1954) cited the new localities of this species: Gerona: Le Llanás a Setcasas, on 1279 m, 27 VII 1921 and Huesca: La Renchusa, on 2125 m, 22—26 VII 1921 Lago de Paderna, 23 VII 1921, Benasque, Puerto de Benasque, on 2417 m, 25—27 VII 1921.

GROUP 13

Group type: *Catoptria ciliciella* (REBEL)

On the fore wing occurs narrow basal stripe interrupted at its end. It is somewhat similar to that of *C. coultonella* (DUP.). In male genitalia saccus oval, normally developed. Pars basalis sheet-like, pointed. Aedeagus armed with two prongs.

Catoptria pseudociliciella sp. n.

[Pl. XL, fig. 4, LXXXIII, fig. 2]

Male: antennae unicolour, brownish, serrated. Palps brownish outside, pale inside. Frons convex, with weak pointed protuberance, dirty whitish. Head dirty whitish. Thorax, patagia, and tegulae olive-brownish. Length of fore wing 14,5 mm, width 5,8 mm. Ground of the fore wing lustrous brownish-olive. Basal stripe narrow, indistinct. It is somewhat similar to that of *C. coultonella* (DUP.). An indistinct whitish

spot and a trace of a whitish oblique streak prolonging basal stripe. No dark dots at the outer margin. Cilia on the outer margin lustrous, whitish, with dark streak of basal scales. Hind wings slightly lustrous, grey. Cilia of the hind wing whitish.

Male genitalia [pl. XL, fig. 4]: uncus slender, pointed. Gnathos terminated by very slight widening. Pars basalis developed as strong sheet, somewhat similar as in *C. laevigatella* (LED.), but curved and sharply pointed at its end. Second process on valva small, pointed. Aedeagus visibly shorter than the whole copulatory apparatus, straight, ending with strongly sclerotized dorsal plate with two distinct prongs.

I do not know the female of this species.

A species very related to *C. ciliciella* (REBEL) described from the Taurus Mts. (Gülek) in Turkey. However, *C. pseudociliciella* sp. n. has distinctly wider fore wings than *C. ciliciella* (REBEL). In the widest place the fore wing of *C. ciliciella* (REBEL) is 5 mm wide, that of *C. pseudociliciella* sp. n. 5,8 mm wide. In male genitalia in *C. pseudociliciella* sp. n. both prongs placed on the end of aedeagus are more or less equally long, while in *C. ciliciella* (REBEL) one of the prongs is twice longer than the other. I have examined the type of *C. ciliciella* (REBEL) (coll. Naturhistorisches Museum in Vienna).

Holotype and one paratype from North Caucasus in author's coll.

GROUP 14

Group type: *Catoptria laevigatella* (LED.)

Fore wing unicolour without design. Pars basalis in male genitalia developed as a strong sheet. Several cornuti in aedeagus. In female genitalia ostium bursae with a small process.

Catoptria laevigatella (LEDERER, 1870)

[Pl. XL, fig. 3, pl. LV, fig. 3, pl. LXXX, fig. 6]

Crambus laevigatellus LEDERER, 1870, Ann. Soc. ent. Belg.: 52, pl. 2, fig. 10.

Antennae brownish, of similar shape as in the previous species. Palps brownish outside, whitish inside. Frons visibly convex. Head, patagia, thorax, and tegulae yellowish-brownish. Length of fore wing ca 11 to 12,5 mm, width ca 4 to 5 mm. Costal margin rather straight, apex in male rounded, in female somewhat pointed. Outer margin delicately bent outwards. Ground of the fore wing without design, strongly lustrous, yellow-brownish. Space below the costal margin visibly paler. No dark dots at the outer margin. Cilia on the outer margin lustrous, unicolour, yellowish. Hind wings pale whitish, with visible lustre. Cilia whitish.

Male genitalia [pl. XL, fig. 3]: uncus and gnathos of equal length. Uncus slender, pointed at the end. Gnathos with triangular widening at the end. Pars basalis well developed, of the shape of a wide strong sheet, somewhat similar as in *C. digitella* (H.-S.). Second, lateral process on valva well developed. Aedeagus very long, narrow, straight. Several long, slender cornuti.

In female genitalia [pl. LV, fig. 3] gonapophyses anteriores absent. Lamella subgenitalis strongly accreted to ostium bursae. Ostium bursae tubular with small process. Ductus bursae strongly sclerotized, only in its middle transparent. Bursa copulatrix transparent with one small, star-like signum.

C. laevigatella (LED.) is known till now from Caucasus and Armenia.

Examined material:

2 males and 1 female from North Caucasus, leg. WOJTUSIAK, author's coll.

2 males: „Caucasus occ.-mer. Rica-Lake, 950 m., 20 VIII 1956 leg. BLESZYŃSKI“, author's coll.

GROUP 15

Group type: *Catoptria fulgidella* (HBN.)

Only one European species belongs here, viz. *C. fulgidella* (HBN.). In external appearance it is similar to such species as *C. radiella* (HBN.), but differs very much from it by its copulatory apparatus. Pars basalis developed as a strong fold.

Aedeagus ending with small prong. Ostium bursae very wide. The species belonging to this group [*C. fulgidella* (HBN.) and *C. algeriensis* (M.-R.)] are nearly identical in their habitus, similarly as the species of such groups as *C. zermattensis* (FREY) or *C. permutatella* (H.-S.).

***Catoptria fulgidella* (HÜBNER, 1810—1813)**

[Pl. XXXIX, fig. 1, pl. LVI, fig. 6, pl. LXXX, fig. 7—8]

Tinea fulgidella HÜBNER, 1810—1813, Samml. Eur. Schmett.: pl. 54, fig. 365 ♀.

Chilo Fulgidellus GERMAR & ZINCKEN, 1817, Magazin Entomol. 2: 84.

Eucarphia Fulgidalis HÜBNER, 1825, Verz. Bek. Schmett.: 364.

Crambus Fulgidellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 65.

Antennae brown, in male deeply serrate, almost pectinate, in female setaceous. Palps from below white at the base, further on brown; brown on outer side, snow-white on outside. Frons slightly convex, rounded, pure white. Head snow-white. Patagia and thorax snow-white in the middle, olive-brown on sides. Tegulae olive-brown. Length of the fore wing varies from 9,5 to 12,5 mm, width 3—4,5 mm. Fore wing rather slender, with straight costal margin, rounded apex and delicately bent outer margin. Fore wing lustrous, with olive-brown ground. Sharply contrasting snow-white basal stripe. It is rather narrow, torn from below, slightly bifurcated near the end. The bifurcation of basal stripe touches the outer margin. In the outer part of wing, above dorsum a sharply delimited, white narrow streak, similarly coloured as the basal stripe. A similar white streak lies at base of wing at the dorsal margin. This design is a little similar as in *C. radiella* (HBN.). Cilia on the outer margin lustrous, brownish, with a streak of dark brown scales at their base. Cilia interrupted several times sharply by white lines. Hind wings lustrous, white, near the margins, especially near the apex darkened by brown. Cilia white, near apex darkened to grey. The streak of basal scales darkened grey in places.

Male genitalia [pl. XXXIX, fig. 1]: uncus and gnathos as long as the dorsal edge of tegumen. Uncus pointed, about twice wider than gnathos. Gnathos slender, very slightly

widened near the end, blunt. Saccus very elongated, near the end very narrow, pointed. Pars basalis strongly developed, separated in the middle from valva. It has a visible secondary fold near the end. A second, not very much developed, lateral process on valva. Valva slightly rounded. Aedeagus long, narrow, slightly widened at the end, rounded, with a distinct ventral prong. A single not very big cornutus.

Female genitalia [pl. LVI, fig. 6]: lamella subgenitalis narrow, ring-like, strongly accreted to ostium bursae. Gonapophyses anteriores not developed. Ostium bursae very wide, passes into ductus bursae without any visible border. Ductus bursae short, its length corresponds to that of bursa copulatrix. One relatively small, star-like signum on bursa copulatrix.

This species establishes a group for itself in the European fauna. No species of *Catoptria* HBN. is visibly related to it in the structure of genitalia. *C. radiella* (HBN.) and some related species are most similar to it externally, but nevertheless they differ distinctly in their genitalia from *C. fulgidella* (HBN.). Not nearer than in North Africa (Algeria) occurs the second species of this group. This is *C. algeriensis* (M.-R.), a species externally indistinguishable from *C. fulgidella* (HBN.) but differing from it very distinctly in the structure of its genitalia.

C. fulgidella (HBN.) is one of the not numerous lowland species of the genus *Catoptria* HBN. It is a xerophilous element not met with in the mountains. As known till now *C. fulgidella* (HBN.) is a species endemic for Europe, distributed mainly in Central Europe. It appears in August and the first half of September. Caterpillar unknown.

Examined material:

Germany: 2 males and 1 female: „Nieder-Weser Eggestedt Klesbg., Lichtfang, 12 VIII 1948, E. JÄCKH“, author's coll.

Poland: 1 male and 3 females from Bielinek n/Odra, author's coll. 4 males: „Puszcza Kampinoska Wydma Łuże, 22 VIII 1945, leg. S. ADAMCZEWSKI“, author's coll. 4 males: „Poznań Główna, 27 VIII 1950, leg. A. SZMYT“, author's coll. 1 male from Ligota, distr. Katowice, 29 VIII 1952, author's coll. 87 males and females from Podgórk, distr. Kraków, 25 VIII — 4 IX 1945—1950, author's coll. 46 males and females from environs of Zawiercie, VIII, leg. MASŁOWSKI, coll. I. Z. P. A. S., Warszawa.

Hungary: 1 male: „Pötharasz puszta, 1939 IX 10, Dr. SZENT-IVÁNY“, author's coll.

GROUP 16

Group type: *Catoptria confusella* (STGR.)

Four European species belong here, viz. *C. confusella* (STGR.), *C. incertella* (H.-S.), *C. staudingeri* (ZELL.) and *C. falsella* (DEN. & SCHIFF.). On the fore wings of all these species a white basal stripe and a white spot prolonging it. Distinct outer band only in *C. falsella* (DEN. & SCHIFF.) Pars basalis developed as a more or less wide fold which is accreted to valva on the whole of its length. Second lateral process sometimes disappearing, as in *C. staudingeri* (ZELL.). Female genitalia of simple constitution. Ostium bursae distinctly accreted to ductus bursae. The species of this group are distributed rather in Southern Europe.

***Catoptria confusella* (STAUDINGER, 1881)**

[Pl. XLI, fig. 3, pl. LVIII, fig. 2, pl. LXXXIII, fig. 8]

Crambus incertellus HEINEMANN, 1865, (nec HERRICH-SCHÄFFER), Schmett. Deutschlands, Kleinschmett. 1/2: 130.

Crambus confusellus STAUDINGER, 1881, Hor. Ent. Ross. 16: 82.

Antennae brown, in male serrate, in female setaceous. Palps brown outside, white inside and from above at the end. Frons strongly convex, rounded, white. Head snow-white. Thorax, patagia, and tegulae brownish-white. Costal margin in male slightly, in female distinctly convex, apex rounded, outer margin distinctly bent outwards. Length of the fore wing about 8,5 mm, width about 3 mm. Ground of the fore wing dull, brown, with snow-white design. White design well developed, covers the major part of the surface of wing. Brown ground forms two transversal bands. Basal stripe present. Its shape is similar to that of such species as *C. pinella* (L.), or *C. permiaca* (PET.). It reaches to the half length of wing, bordered with a dark oblique inner band, which is sometimes indistinct, sometimes connected by the dark ground with the outer band. A white oval or trapezoidal spot prolonging basal stripe in the place between outer and inner band. This

spot is sometimes very slightly developed or even absent. Above and below this spot the ground shows a white, spot-like blur. Outer band above the middle of wing arched toward the outer margin, below strongly bent toward the wing base. In the middle of the width of wing it is bordered with white, in the shape of a toothed band. At the outer margin below the middle of the width of wing a long white spot. Ground in the apical field white; this colouring is connected with the white bordering of the outer band. Several distinct small dark dots at the outer margin. Cilia on the outer margin white, darkening in places, with dark brown, strongly lustrous, basal streak of scales. Hind wings slightly lustrous, whitish, with white cilia.

C. confusella (STGR.) is the species similar to the related *C. incertella* (H.-S.). *C. incertella* (H.-S.), however, has a less developed protuberance on frons than *C. confusella* (STGR.). Besides on the fore wing of *C. incertella* (H.-S.) the dark ground does not form two distinct transversal bands as in *C. confusella* (STGR.). The design on the fore wing in *C. incertella* (H.-S.) is more sharp than in *C. confusella* (STGR.). The white spot prolonging the basal stripe is very well developed.

Male genitalia [pl. XLI, fig. 3]: uncus and gnathos very slender. Uncus pointed, gnathos of the same length as uncus, with distinct widening at the end, pointed from the ventral side. Saccus very elongated. Pars basalis long, wide, fold-like, widely rounded at the end. It is indistinctly bordered from the rest of valva. Valva rounded. A second process of valva present. It lies near the ventral edge of valva and is distinctly visible. Aedeagus narrow, distinctly shorter than the whole copulatory apparatus. One cornutus, relatively wide, short.

In the female genitalia [pl. LVIII, fig. 2] gonapophyses anteriores are developed as triangular pointed sheets of the lamella subgenitalis. Lamella subgenitalis distinctly accreted to ostium bursae. Ostium bursae funnel-like, long, strongly sclerotized. Ductus bursae very short, its length corresponds to half the length of ostium bursae. Distinct narrowings between ostium and ductus bursae, and between ductus and bursa copulatrix. Bursa copulatrix large, its length equals to the length of the rest of copulatory apparatus. One small signum.

C. confusella (STGR.) is a Pannonian element, distributed in Czechoslovakia and Austria. It is rather a lowland species.

Examined material:

Austria: 1 male: „Austria inf. Dürnstein, 25 VIII 1935, JOS. KLIMESCH“, author's coll.

Czechoslovakia: 2 males: „Praha Bohemia Dr. RUD. SCHWARZ“, author's coll. 1 female: „Gaisberg, 8 IX 1907. Stein a. D[onau]“ author's coll. 3 males and 1 female: „Bohemia Praha, leg. VLACH“, author's coll.

Catoptria incertella (HERRICH-SCHÄFFER, 1856)

[Pl. XLI fig. 7, pl. LVIII, fig. 3, pl. LXXXIII, fig. 6]

Crambus Incertellus HERRICH-SCHÄFFER, 1856, Syst. Bearb. Schmett. Eur. 6: 144, Sppl. 165.

Antennae similar as in the previous species. Palps brown outside, snow-white inside and from above. Frons white, convex, rounded. Head white. Patagia light greyish on sides, white in the middle. Thorax white. Tegulae light greyish. Length of the fore wing 8,3 mm, width 2,8 mm. Costal margin almost straight, apex rounded, outer margin oblique, visibly convex. Ground and design of the fore wing rather similar as in the previous species. Transverse bands, particularly the inner one, very indistinct. White spot prolonging the basal stripe visibly more slender and elongated than in *C. confusella* (STGR.). Fore wing somewhat more slender than in *C. confusella* (STGR.). Hind wings, similarly as in the previous species, lustrous, white, with white cilia.

Male genitalia [pl. XLI, fig. 7]: uncus similar as in *C. confusella* (STGR.). Gnathos pointed. Saccus wider and less elongated than in *C. confusella* (STGR.). Pars basalis somewhat narrower than in the previous species. Second lateral process relatively strongly developed. Aedeagus straight, narrow, somewhat shorter than in the previous species. A single cornutus.

Female genitalia [pl. LVIII, fig. 3] somewhat similar as in *C. confusella* (STGR.), however, gonapophyses anteriores less developed; the long ostium bursae strongly sclerotized only to half of its length, ductus bursae longer, weakly sclerotized. Bursa copulatrix transparent, with one small signum.

C. incertella (H.-S.) was reported by OSTHELDER (1951)

from Macedonia. It is known also from Caucasus. From outside Europe it is known from Persia and Armenia.

Examined material:

1 female: „STAUDG. Caucas, 1882“, coll. Museum of the Natural History in Vienna. 1 male from Persia, coll. TOLL.

***Catoptria staudingeri* (ZELLER, 1863)**

[Pl. XLI, fig. 5, pl. LVIII, fig. 8, pl. LXXXIII, fig. 7]

Crambus staudingeri ZELLER, 1863, Chil. Cramb. Gen. Spec.: 28.

Platytes cuneolellus CHRÉTIEN, 1898, Naturalist: 177.

Antennae and palps of similar colour and shape as in related species. Frons convex, rounded, white. Head white. Patagia brown on sides, white in the middle. Tegulae brown. Thorax white. Length of fore wing 7,5—8 mm, width 2,1—2,3 mm. Fore wing more slender and narrower than in the previous species. Ground and design of the fore wing rather similar as in *C. incertella* (H.-S.). Inner band not present. Basal stripe narrow, in the middle only a little widened, while in *C. incertella* (H.-S.) it is visibly widened at its end. White spot prolonging basal stripe more oblique, and visibly narrower. Outer band indistinct, narrow, line-like, very strongly arched, toothed. Cilia on the outer margin with slight lustre, only basal streak of scales strongly lustrous, while in previous species the whole cilia have strong lustre; greyish distinctly divided by a white line, and several times interrupted by white. Hind wings lustrous, white or white-greyish, with snow-white cilia.

Male genitalia [pl. XLI, fig. 5]: uncus very slender, pointed. Gnathos slender, terminated with distinct, triangular, pointed widening. Saccus developed normally, not elongated as in *C. confusella* (STGR.). Pars basalis visibly shorter and wider than in the related species. It is developed in the shape of a wide rounded sheet, not separated and indistinctly bordered from valva. Second lateral process absent. Aedeagus narrow, straight, visibly shorter than the whole copulatory apparatus. Single cornutus similar as in the related species.

Female genitalia [pl. LVIII, fig. 8]: gonapophyses anteriores developed as triangular widenings of lamella subgenitalis. Ostium bursae relatively wider and shorter than in the previous

species, similarly sclerotized. Ductus bursae short, weakly sclerotized. Bursa copulatrix transparent. I could find no signum.

This species is an exception in the whole Section A of the genus *Catoptria* HBN. because of the lack of signum in female genitalia, as well as the second process on valva in male genitalia.

C. staudingeri (ZELL.) is a West-Mediterranean element. It is known from Sicily, South France, Spain and Portugal.

Examined material:

Sicily: 1 male: „Mistretta, 1000 m, Sicilia, 17 IX 1938, coll. H. REISSER, Wien“, author's coll.

Spain: 1 male: „Hispania Prov. Madrid Escorial, IX 1923“, author's coll.

Portugal: 1 female: „Soalheira“, author's coll.

Catoptria falsella (DENIS & SCHIFFERMÜLLER, 1775)

[Pl. XLI, fig. 6, pl. LVIII, fig. 1, pl. LXXXIII, fig. 5]

Tinea falsella DENIS & SCHIFFERMÜLLER, 1775, Syst. Verz. Schmett. Wien. Geg.: 134.

Tinea Abruptella THUNBERG, 1794, Dissert. Entomol.: fig. 2 (s. TREITSCH.).

Palparia falsa HAWORTH, 1811, *Lepidoptera Britannica* 3: 488.

Chilo Falsellus GERMAR & ZINCKEN, 1817, Magazin Entomol. 2: 80.

Argyroteuchia Falsalis HÜBNER, 1825, Verz. Bek. Schmett.: 364.

Crambus falsellus STEPHENS, 1834, Illustr. Brit. Entomol. *Haustellata* 4: 326.

Antennae brown, in male distinctly serrate, in female setaceous. Palps brown outside, white to dirty creamy inside and from above. Frons convex, rounded, white to creamy. Head, patagia, thorax, and tegulae white to brownish. Costal margin almost straight, apex mildly rounded. Outer margin below apex distinctly wavy. Ground of the fore wing dull, light brown or brown, with white design, and whitish blurs in the shape of streaks or spots. Basal stripe distinctly bordered, narrow, sometimes with distinctly visible small tooth below. Not widened at its end as in related species e. g. *C. confusella* (STGR.) or *C. incertella* (H.-S.). Basal stripe reaching further than middle of wing's length; bluntly ended, pure white or

sometimes creamy. White spot prolonging basal stripe distinctly remote from the end of stripe, and touching the outer band. Outer band in shape of a very narrow brown line, widely arched toward the outer margin. Above the dorsal margin the outer band presents a distinct sharply pointed tooth pointed toward wing base. In the apical field a distinct white spot, sometimes darkened yellowish. Several black dots below the middle of the wing's width at the outer margin. In this place a distinct white spot, sometimes yellowish, darkened similarly as the apical spot. Cilia on the outer margin distinctly lustrous, brown, several times sharply interrupted by white, at the apex whitish at their base. Hind wing almost dull, grey. Cilia of hind wings white or dirty greyish-white.

? f. *neutrella* (TURATI, 1911).

Crambus neutrellus TURATI, 1911, Bull. Soc. ent. France: 293, fig. 5.

TURATI described *Crambus neutrellus* from Sicily. It is probably only a form of *C. falsella* (DEN. & SCHIFF.) as the author himself mentions in the description of this species. I have two specimens from Italy which agree with the description of *Crambus neutrellus* TRTI. I did not find any important differences in the constitution of the copulatory apparatus of these specimens and typical *C. falsella* (DEN. & SCHIFF.).

Male genitalia [pl. XLI, fig. 6]: uncus pointed, rather wide, distinctly wider than gnathos. Gnathos narrow, rounded at the end. Saccus long, narrow. Pars basalis reaches to the half of length of valva; distinctly bordered from valva, rounded. Second (lateral) process of valva distinctly developed. Aedeagus rather straight, at the begin distinctly wider than at the end. Single cornutus.

Female genitalia [pl. LVIII, fig. 1]: gonapophyses anteriores distinctly developed. Ventral edge of ostium bursae concav. Ductus bursae transparent. On bursa copulatrix one small star-like signum.

C. falsella (DEN. & SCHIFF.) is known generally from Europe, but reported also from Western Asia. It occurs from June to October, in various environments, however, I found it always rather in dry ones. It is rather a lowland element, in mountains

it reaches ca 1500 m. Caterpillar feeds on various mosses such as *Barbula muralis* etc.

Examined material:

France: 1 male: „Gèdre et environs Ht.-Pyrénées, 15—30 VII 1936, 1000—1500 m, coll. CH. FISCHER“, author's coll. 1 male: „10 IX 1927, Le Carriol par Douelle (Lot.) CH. FISCHER LHOMME“, author's coll. 1 female: „Lac d'Alfeld Sewen Ht.-Rhin, 19 VII 1950, CH. FISCHER“, author's coll.

Germany: 5 males: „Kochel Oby., 600 m, Ha. Li., 30 VII — 11 VIII 1946—1952, leg. Dr. H. WAGNER“, author's coll. 3 males and 1 female: „Süd-Pfalz Geilweilerhof, 24 VIII 1949, leg. Dr. DE LATTIN“, author's coll.

Austria: 1 male: „Carinthia Klagenfurt Umg., 26 VI 1943, leg. THURNER Jos.“, author's coll. 1 male: „29 VIII 1946, Carinthia Ulrichsberg, leg. THURNER“, author's coll.

Switzerland: several spec. from Wallis-Berisal, coll. I. Z. P. A. S. Warszawa. 1 spec. from Engadin, coll. I. Z. P. A. S., Warszawa.

Hungary: 1 female: „Királyhalom, DR. SCHMIDT, 1933 VII 20—31“, author's coll.

Italy: 1 male: „Brenzone Gardasee, 11 X 1943“, author's coll. 1 male: „Roma Frascati, VIII 1943“, author's coll. 2 males: „Trentino Pinzolo, 28 VIII 1927, A. FIORI“, author's coll. 1 male: „Emilia Samone, 20 VII 1939, A. FIORI“, author's coll.

Sicilia: 1 male: „La Madonna Sicilia, 6 IX 1943, leg. DANNEHL“, coll. TOLL.

Poland: 1 male from Tatry Mts. Wołoszyn 1150 m, 10 VIII 1946, author's coll. 5 spec. from Pieniny Mts., coll. I. Z. P. A. S., Warszawa. 1 male from Mszana Dolina distr. Limanowa, 5 VIII 1949, author's coll. 4 males and 1 female from Kraków and environs, VII—VIII 1946—1947, author's coll.

GROUP 17

Group type: *Catoptria verella* (GERM. & ZINCK.)

Only one species *C. verella* (GERM. & ZINCK.) belongs here. Externally it is characteristic by the lack of basal stripe of the fore wing. In male genitalia no lateral process on valva.

Catoptria verella (GERMAR & ZINCKEN, 1817)

[Pl. XLII, fig. 4, pl. LVII, fig. 8, pl. LXXXIII, fig. 4]

Chilo verellus GERMAR & ZINCKEN, 1817, Magaz. Entomol. 2: 81.
Crambus verellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett.
 Eur. 4: 58, Sppl. 137.

Antennae brownish, in male serrate from below, in female setaceous. Palps brown outside, whitish inside and above. Frons whitish, slightly convex, rounded. Head whitish. Patagia brown on sides, whitish in the middle. Thorax and tegulae brown. Length of the fore wing about 8 mm, width 3,5 mm. Sexual dimorphism not evident in shape of the fore wing. Costal margin almost straight, apex delicately rounded, outer margin slightly oblique, visibly angled in the middle of the wing's width. Fore wing dull with brown ground, paled in places. Basal stripe reduced. There is sometimes a slightly visible narrow short streak at the base of wing. More or less in the middle of wing, an indistinct, oblique, whitish transverse stripe, which has the character of an inner band. Outer band more distinct, although very little contrasting with ground of wing. It occurs as a very narrow brown line, arched in the upper part of wing with a distinct tooth-like angle above the dorsal margin pointed toward base of wing. A distinct white spot situated obliquely to dorsum on the inner side of this tooth and a little below the middle of the wing's width. Outer band below the costal margin bordered with white. Several dark dots at the outer margin below its angle. Cilia on the outer margin brown with strong lustre, several times interrupted by white (generally four times in the upper part of wing and once in the lower one). Hind wings grey, almost dull, often whitish near apex. Cilia of the hind wings distinctly lighter than ground, usually white, sometimes slightly darkened in places.

Male genitalia [pl. XLII, fig. 4]: uncus somewhat shorter than gnathos, terminated by a delicate prong. Gnathos curved, delicately rounded at the end. Pars basalis not distinctly bordered from the valva by the degree of sclerotization. It has the shape of a strong long sheet, detached from valva in the half of its length. The part of pars basalis separated from valva is narrow, it has the appearance of process which is provided dorsally near the end with a few small thorns. The second process of valva, which is characteristic for the genus *Catoptria* HBN. is absent. The terminal part of valva little sclerotized, narrow. Aedeagus slightly curved, its length equals that of the whole genitalia. It is unarmed and without cornuti.

In female genitalia [pl. LVII, fig. 8] gonapophyses anteriores absent. Lamella subgenitalis relatively narrow, rather strongly accreted to ostium bursae. Ostium bursae not very much different from the rest of ductus bursae. It is only a little more sclerotized and wider than the latter. It is tubular. Bursa copulatrix transparent with one small, star-like signum. Ductus bursae straight without a loop, not very much sclerotized, with weakly developed longitudinal ribbing.

Catoptria verella (GERM. & ZINCK.) is a species known till now only from Europe where it is relatively rarely met with. This is probably because it is difficult to find and comes only to the light of lamps. It occurs in July and August. The caterpillar feeds on mosses which grow on trees.

Examined material:

France: 3 males: „Villé (B. R.), 10 VII 1931“, author's coll.

Germany: 12 males and females: „Veldes Oberkrain, 21—30 VI 1943, DANNEHL leg.“, coll. TOLL.

Poland: 1 male: „Poznań, 20 VII“, coll. I. Z. P. A. S., Warszawa. 1 male from Międzyzdroje (Northern Poland), coll. I. Z. P. A. S., Warszawa. 1 male from Żwir (environs of Warszawa), 21 VIII, coll. I. Z. P. A. S., Warszawa. 1 male from Bielinek n/Odrą, author's coll. 1 male: „Kraków, 20 VII 1931, STACH“, coll. TOLL.

USSR: 5 males: „Wołczków, pow. Zaleszczyki 23 VI — 2 VII 1935, S. TOLL. leg.“ (Podolia), coll. TOLL.

Section B

Section B is divided into three groups which together comprise five European species. They are characteristic by the complete lack of the second (lateral) process on the inner side of valva in male genitalia. Pars basalis developed as a strong shovel. Saccus very elongated. In female ostium bursae distinguished by the degree of sclerotization from the rest of ductus bursae while in the species of the section A this feature is not evident. In some of the species of section B the white basal stripe is, if at all present, generally weakly developed. Some species as *C. lythargyrella* (HBN.) or *C. biformella* (REBEL) have no stripe at all. The species of the section B are in general montane ones. *C. lythargyrella* (HBN.) is one exception, a species exclu-

sively confined in Central Europe to lowlands and appearing in dry and sandy regions. In the Alps and Balkans on the other hand this species reaches considerable heights.

GROUP 1

Group type: *Catoptria coulonella* (DUP.)

Three European species belong here: *C. coulonella* (DUP.), *C. combinella* (DEN. & SCHIFF.), and *C. orientella* (H.-S.). They show a very similar structure of male as well female genitalia. In the design of wings on the other hand *C. orientella* (H.-S.) differs considerably from the two remaining species of this group. Because of the dark coloration *C. orientella* (H.-S.) was sometimes compared with *Pediasia alaica* (REBEL), which, however, is very little related to it and belongs to the genus *Pediasia* HBN., as I showed recently after investigation of the genitalia of the type of *Crambus alaicus* REBEL. As far as the geographical distribution of the species of the group in question is concerned they all (with exception of *C. lythargyrella* (HBN.) are known exclusively from Europe. *C. coulonella* (DUP.) occurs in the Alps, Sudety Mts., and Carpathians; *C. combinella* (DEN. & SCHIFF.) is an Alpine endemic, and *C. orientella* (H.-S.) a Transsylvanian endemic.

Catoptria coulonella (DUPONCHEL, 1836)

[Pl. XLII, fig. 3, pl. LVII, fig. 5, pl. LXXXIV, fig. 1—6]

Crambus coulonellus DUPONCHEL, 1836, Hist. Nat. Lép. France, 10: 128, pl. 273, fig. 6.

Crambus taeniellus ZELLER, 1839, Isis: 174.

Crambus Taeniellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 60, Sppl. 6.

A species extremely variable in the coloration and design of the wings but showing no considerable fluctuations in the details of the constitution of genitalia.

Antennae brownish, in male serrate underneath, in female setaceous. Palps brown-grey, in female whitish on inner side.

Frons slightly convex, rounded. Frons, head, patagia, thorax, and tegulae of variable colour, brown, grey-brown, olive-brown, or grey-whitish. Those of females paler than of the males. Fore wing in female distinctly narrower than in male. Costal margin in females more convex at the base, apex more pointed, outer margin more oblique, underneath apex delicately bent inwards, while in males it is wholly slightly bent outwards. Length of the fore wing varies from 11,5 to 13,5 mm, width from 4—5,5 mm. Fore wing lustrous, olive-brown. Basal stripe in females better visible and usually wider than in males. It reaches to half the wing's length and in its prolongation there are a white spot and a white streak. The white spot in males generally forked on the outer side. Sometimes the basal stripe fuses with the white spot prolonging it into one stripe. This stripe then is relatively narrow. The white streak oblique, near the outer edge of the white spot it is sometimes indistinct in males. In females on the other hand it has generally a tooth-like prolongation towards the dorsal margin, and above it is connected with the white spot situated below costal margin by a very weak stripe consisting of scarcely scattered light-coloured scales. These spots are situated as a band. Below the white spot prolonging the basal stripe there appears sometimes, in males as well as in females, a whitish blur. Ground of the fore wings in females generally distinctly suffused with more or less whitish scales. Several dark dots at the outer margin. Cilia on the outer margin lustrous, divided longitudinally by darker line, in males greyish, in females whitish. Hind wings with slight lustre, grey, darker at the margins than in the middle. Cilia of hind wings in males dirty white, in females snow-white.

On 23 VI 1953 I collected in Tatry Mts. on the southern slope of Mała Świnica (about 1300 m) a specimen of male *C. coultonella* (DUP.) [pl. LXXXIV, fig. 4] which differs by its design and coloration of fore wings from all specimens of this species thus far known to me. The design of fore wing completely modified. The white basal stripe completely absent, while the white spot prolonging the basal stripe is very well developed. The white streak which is usually situated obliquely between white spot and outer margin completely wanting. It is inte-

resting that some elements of the white design are reduced but the white spot prolonging the stripe is developed distinctly better than usual. *C. coultonella* (DUP.) is a species very variable in design of fore wings but the fluctuations of the design tend either to its reduction or to better development. In this case some elements of the white design vanished while others developed abnormally. Cilia on the outer margin dark, while in typical specimens of *C. coultonella* (DUP.) it is whitish, divided longitudinally by a darker line. It is a very stable feature and by it this species differs from the similar *Catoptria combinella* (DEN. & SCHIFF.). Hind wings in the middle very much paler.

C. coultonella (DUP.) is a species very similar externally to *C. combinella* (DEN. & SCHIFF.) and sometimes even confused with it. Both these species can be easily distinguished by the different coloration of cilia on the outer margin of fore wing. Cilia of *C. coultonella* (DUP.) in this place are white and divided lengthwise by a darker line. The base of cilia of *C. combinella* (DEN. & SCHIFF.) on the other hand is whitish while its outer side is dark. The border between both these colours is very sharp. Besides, *C. combinella* (DEN. & SCHIFF.) has generally the basal stripe of the fore wing uniform, long, not divided into proper stripe and the spot prolonging it, as in the case in *C. coultonella* (DUP.). This feature is not, however, a decisive one, for sometimes the aberrated specimens of *C. coultonella* (DUP.) have the basal stripe identical with that in *C. combinella* (DEN. & SCHIFF.).

Male genitalia [pl. XLII, fig. 3]: uncus and gnathos of more or less equal length, relatively thick. Uncus delicately rounded near its end, gnathos ending with a triangular widening. Saccus very elongated, pointed. Pars basalis very well developed as a shovel-like process. On the ventral side there is a secondary fold. The basal part of valva strongly sclerotized. The narrow terminal part weakly sclerotized. Aedeagus straight, visibly shorter than the whole copulatory apparatus. Several cornuti appear. They have the shape of long, thin prongs and are not scattered on the whole length of aedeagus but grouped together.

Female genitalia [pl. LVII, fig. 5]: gonapophyses posteriores short, rather thick but very variable in their thickness. Gonapophyses anteriores absent. Lamella subgenitalis accreted

strongly to ostium bursae. Ostium bursae tubular, strongly sclerotized. Ductus bursae behind ostium bursae weakly sclerotized. The border of the sclerotization of ostium bursae and ductus bursae runs sharply. Bursa copulatrix transparent, with one small star-like signum.

Catoptria coultonella (DUP.) is a montane species distributed in the Alps, Sudety Mts., Tatry Mts., and Eastern Carpathians. In Tatry Mts. it flies in the area between the base (900 m) and up to 2300 m. It occurs in June, July and August in grassy places. In the Alps according to some authors it is rarer than *C. combinella* (DEN. & SCHIFF.). In Tatry Mts. and in Czarnohora (Eastern Carpathians) very common. The biology of caterpillar unknown thus far.

Examined material:

Alps: 1 male: „Piemonte Biella Alta Val Cervo, VII 1938, A. FIORI“, author's coll. 1 male: „Piemonte L Mucrone, 9 VIII 1938, A. FIORI“, author's coll. 1 male: „Veneto Coglian, 30 VI, 1923, A. FIORI“, author's coll. 1 male: „Isère col des Ayes alt. 1545 m, 21 VII 1937, coll. J. PRAVIEL“, author's coll. 1 male: „Isère Dent de Croles alt. 2000 m, 24 VII 1937, coll. J. PRAVIEL“, author's coll. 1 female: „9 VII 1950, Tarrad Höhe Kärnten, coll. THURNER“, author's coll. 3 spec.: „Albula Bergün, VII“, coll. I. Z. P. A. S., Warszawa.

Sudety Mts.: 2 spec.: „Silesia monts“, coll. I. Z. P. A. S., Warszawa.

Tatry Mts.: 85 males and females from Tatry Mts.: Zawrat (2000 m), Beskid (2000 m), Hala Gąsienicowa (1500 m), Kopa Magury (1700 m), Dolina Ku Dziurze (900—1000 m), Dolina Małej Łąki (1000—1100 m), Dolina Kościeliska (1000—1100 m), Hala Ornak (1100 m), Pyszna (1400—1600 m), Tomanowa Przełęcz (1500—1700 m), 26 VI — 5 VIII 1946—1953, author's coll.

Eastern Carpathians: 25 males and females from Czarnohora, VII, coll. I. Z. P. A. S., Warszawa. 1 spec. from Gorgany (Rafajłowa), VII, coll. I. Z. P. A. S., Warszawa.

***Catoptria combinella* (DENIS & SCHIFFERMÜLLER, 1775)**

[Pl. XLII, fig. 1, pl. LVII, fig. 7, pl. LXXXIV, fig. 7—8]

Tinea combinella DENIS & SCHIFFERMÜLLER, 1775, Syst. Verz. Schmett Wien. Geg.: 319.

Tinea petrificella HÜBNER, 1796, Samml. Eur. Schmett.: 28, pl. 7, fig. 47.

Chilo Petrificellus GERMAR & ZINCKEN, 1817, Magazin Entomol. 2: 94.

Exoria Combinalis HÜBNER, 1825, Verz. Bek. Schmett.: 367.

Chilo Combinellus TREITSCHKE, 1832, Schmett. Eur. 9: 123.

Crambus simplonellus DUPONCHEL, 1836, Hist. Nat. Lép. France 10: 130, pl. 273, fig. 7.

Crambus combinellus DUPONCHEL, 1836, Hist. Nat. Lép. France 10: 126, pl. 273, fig. 5.

Antennae brown, of similar shape as in the previous species. Palps brown to olive-brown, inside (particularly in females) whitish. Frons convex, rounded. Head white to dirty creamy, in females generally paler than in males. Patagia, thorax and tegulae olive-brown to brown. Length of the fore wings varies from 12 to 13 mm, width from 4 to 5,5 mm. Fore wing of similar shape as in *C. coultonella* (DUP.); costal margin in females of *C. combinella* (DEN. & SCHIFF.) is somewhat more convex than in *C. coultonella* (DUP.). Ground of the fore wing light olive to dark brown. Basal stripe narrow, uninterrupted, while in the related *C. coultonella* (DUP.) it is generally divided. Basal stripe always white. At the end it is widened, bifurcated, from below indistinctly bordered. More or less distinct traces of the outer band which is, similarly as in *C. coultonella* (DUP.), more distinct in the middle of wing, where it forms a streak parallel to the outer edge of the basal stripe. Dark dots at the outer margin. Cilia on the outer margin at its base white, at the end dark. The border between these two colours is very sharp. Hind wing with very delicate lustre, grey or brown-grey. Cilia of hind wings white or creamy.

f. *atrox* (GALVAGNI, 1920), Verh. Zool.-bot. Ges. 70: 54.

The specimens of this form are distinctly darkened brown. It is probably a local race. From Torrener Joch (Austria).

Male genitalia [pl. XLII, fig. 1] similar as in the related *C. coultonella* (DUP.). Uncus and gnathos a little narrower than in *C. coultonella* (DUP.). Pars basalis without secondary fold which occurs in *C. coultonella* (DUP.). Valva very narrow. Aedeagus distinctly longer and narrower than in *C. coultonella* (DUP.). Its length almost corresponds to the length of the whole copulatory apparatus. Cornuti more numerous than in *C. coultonella* (DUP.).

Female genitalia [pl. LVII, fig. 7] delusively similar as in *C. coultonella* (DUP.). Gonapophyses anteriores wide, short,

of variable shape. Ostium bursae and ductus bursae a little variable in shape. The border of sclerotization between ostium bursae and ductus bursae is sharp.

C. combinella (DEN. & SCHIFF.) is an Alpine endemic, according to many authors more common than *C. coultonella* (DUP.). It occurs from 700 to about 2000 m from June to August.

Examined material:

Alps: 6 males and females: „Styria Gesäuse Zinödl, 1700—1800 m, 3 VII 1937, J. KLIMESCH“, author's coll. 1 male: „23 VI 1950, Kossiak, 1700 m, Karawanken, THURNER leg.“, author's coll. 9 males and females: „14 VII 1949, Klagenfurt Ht. Karawanken Kärnten, 1700 m“, author's coll. 3 males: „Ammerwaldsgeb. Frieder, 1700—2000 m, 22 VII 1948, coll. OSTHELDER“, author's coll. 6 males and females: „Bavaria alp. Kochel, 700 m, 20 VII 1943, L. OSTHELDER leg.“, author's coll. 1 spec. from Simplon (Switzerland), coll. I. Z. P. A. S., Warszawa. 3 spec. from Engadin, coll. I. Z. P. A. S., Warszawa.

***Catoptria orientella* (HERRICH-SCHÄFFER, 1849)**

[Pl. XLII, fig. 2, pl. LVII, fig. 6, pl. LXXXV, fig. 2]

Crambus orientellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 175.

Antennae brown, in male serrate from below, in female setaceous. Palps in male dark brown, in female paler. Frons slightly convex, rounded. Frons, patagia, thorax, and tegulae in male dark brown, in female paler. Length of fore wing about 11 mm, width about 4,3 mm. Costal margin almost straight, apex rounded, outer margin bent outwards, slightly oblique. Ground of the fore wing in male dark brown with darker design, in female olive-brown with indistinct whitish design in the shape of basal stripe. In male very indistinct traces of two transversal dark brown bands. Outer band in the upper part of wing arched towards the outer margin, with indistinct tooth below pointed toward wing base. Inner band strongly oblique, with a darkening in the shape of a lateral streak in middle of wing. Dark dots at the outer margin indistinct. Cilia on the outer margin in male brown, in female paler. Hind wing dull brown with cilia dark brown in the male, paler in the female.

Male genitalia [pl. XLII, fig. 2] of a shape similar as in the two previous species, however, in its particular parts of somewhat different shape. Uncus less pointed, gnathos with slighter widening at the end than in the two previous species. Tegumen and gnathos similar as in *C. coulourella* (DUP.) and *C. combinella* (DEN. & SCHIFF.). Pars basalis without the secondary fold, distinctly rounded, while in *C. coulourella* (DUP.) and *C. combinella* (DEN. & SCHIFF.) it is rather bluntly truncate. Valva wider than in the two related species. Aedeagus longer than in *C. coulourella* (DUP.), but shorter than in *C. combinella* (DEN. & SCHIFF.). It is distinctly shorter than the whole copulatory apparatus. Numerous small cornuti. They are much smaller and more numerous than in *C. coulourella* (DUP.) and *C. combinella* (DEN. & SCHIFF.).

Female genitalia [pl. LVII, fig. 6] similar as in the two previous species. Lamella subgenitalis a little wider than in *C. coulourella* (DUP.) and *C. combinella* (DEN. & SCHIFF.). Ostium bursae longer than in *C. coulourella* (DUP.) and *C. combinella* (DEN. & SCHIFF.). Ductus bursae weakly sclerotized, transparent. One star-like signum on bursa copulatrix.

C. orientella (H.-S.) is a Transsylvanian element. It occurs in high altitudes.

Examined material:

Transsylvania: 1 male and 1 female: „Siebenbürg. Alpen Wo. 66. coll. MÖSCHL.“, coll. Zoological Museum of the Humboldt University in Berlin. 2 males: „Siebenbürgen“, author's coll.

GROUP 2

Group type: *Catoptria biformella* (REBEL)

One European species belongs here, viz. *C. biformella* (REBEL). On the fore wing streak-like basal stripe reduced or absent. Strong sexual dimorphism apparent. In female the wings strongly reduced. In male genitalia pars basalis visibly narrower than in the species of previous group.

***Catoptria biformella* (REBEL, 1893)**

[Pl. XXXIX, fig. 2, pl. LXXXV, fig. 1, 3—5]

Crambus biformellus REBEL, 1893, Stett. ent. Zeit.: 39.

Antennae brownish, unicolour, in male serrate, in female setaceous. Palps brown, frons visibly convex, rounded, brown. Head, patagia, thorax, and tegulae brownish. Wings of male normally developed, those of female strongly atrophied, somewhat similar to those of some species of *Gelechiidae* or *Oecophoridae* (e. g. *Gelechia dzieduszyckii* Now.). Length of the fore wings in male about 11 mm, width about 4 mm, in female length 10 mm, width 2 mm. Costal margin in male almost straight, apex rather rounded, outer margin strongly oblique. In female costal margin at wing base strongly convex, then visibly concave. Apex sharply pointed, outer margin very strongly oblique. Wing strongly narrowed in the outer part. Ground of the fore wing grey to brown. There appears an indistinct basal stripe in the shape of a narrow streak. It is sometimes strongly reduced. Outer band consisting of dark isolated spots. It is strongly arched toward the outer margin. This band is sometimes reduced, in females very indistinct. Dark dots at the outer margin tend to disappear. Cilia on the outer margin with slight lustre, whitish. Hind wings slightly lustrous, clear greyish to grey-brownish.

subsp. *majorella* (DRENOWSKI, 1925) [pl. LXXXV, fig. 1].*Crambus biformellus* var. *majorellus* DRENOWSKI, 1925, Dtsch. ent. Zeit.: 112.

Palps white inside. Frons and head white. Length of the fore wing of male 16 mm, width 5,5 mm. Ground of the fore wing distinctly paler than in the typical form, whitish-olive. Basal stripe and outer band indistinct. Hind wings white with white cilia. From Stara Planina (Bulgaria).

Male genitalia [pl. XXXIX, fig. 2]: uncus and gnathos slender. Uncus pointed. Gnathos terminated by a triangular widening. Saccus strongly elongated, somewhat more than in *C. coultonella* (DUP.). Pars basalis strongly developed, of the shape of a narrow curved shovel. There is a small secondary process at its base. Second process on valva absent. Aedeagus

long, narrow, straight. Numerous small cornuti situated in a long narrow row. I have not examined the genitalia of female of this species.

C. biformella (REBEL) is a montane element known from Balkans, and Transcaucasia. It appears in July from 1800 to 2900 m.

Examined material:

Bulgaria: Typical form. 1 male and 1 female: „15—25 VII 1933, Pirin Gb. 2000 m, Bulgarien, leg. THURNER“, author's coll. 1 male: „Witoscha planina, AL. K. DRENOWSKI“, author's coll. Subsp. *majorella* (DREN.) 1 male: „Alibotusch Geb. N.-O. Mazedonien AL. K-OW. DRENOWSKI“, coll. I. Z. P. A. S., Kraków.

GROUP 3

Group type: *Catoptria lythargyrella* (HBN.)

Only one of the European species belongs here, viz. *Catoptria lythargyrella* (HBN.). It differs from other species related to it by the lack of design on the fore wings similarly as in *C. languidella* (ZELL.). The ground of the wings in this species, however, is golden, while in *C. languidella* (ZELL.) it is white. Male genitalia in relation to other species of the group *Crambus* F. s. l. very much elongated. Saccus strongly narrowed and elongated. Pars basalis shovel-like. In female ostium bursae with dorsal incision.

Catoptria lythargyrella (HÜBNER, 1796)

[Pl. XLII, fig. 5, pl. LVII, fig. 4, pl. LXXXV, fig. 6—8]

Tinea lythargyrella HÜBNER, 1796, Samml. Eur. Schmett.: 30, pl. 33, fig. 227 ♂.

Chilo Lithargyrellus GERMAR & ZINCKEN, 1817, Magazin Entomol. 2: 99.

Selagia Lithargyralis HÜBNER, 1825, Verz. Bek. Schmett. 371.

Crambus lithargyrellus DUPONCHEL, 1836, Hist. Nat. Lép. France, 10: 116, pl. 274, fig. 6 ♂.

Crambus Lythargyrellus Stainton, 1851, Suppl. Catal.: 1.

Antennae slightly lustrous, brown, in male serrate from below, in female setaceous. Palps brown outside, pale, yellowish inside and underneath. Frons and head pale-yellowish. Frons convex, conical protuberance pointed. Patagia and tegulae lustrous yellow-brownish-golden. Thorax whitish-yellowish. Length of the fore wing varies from 8,2 to 14,8 mm, width from 2,5—5,2 mm. Fore wing slender, costal margin in the middle very slightly bent inwards. Apex rounded. Outer margin slightly oblique. Ground of the fore wing very lustrous, yellow-brown-golden. The design disappearing, except more or less developed longitudinal palings on veins. No dark dots at the outer margin. Cilia on the outer margin with distinct lustre, similarly coloured as ground of wings. Hind wings with slight lustre, grey. Cilia of hind wings distinctly paler than ground of wings, dirty whitish.

C. lythargyrella (HBN.) strongly varies sometimes in the coloration of fore wings, which are sometimes distinctly darker than usual, golden-brown, or whitish-yellow.

subsp. *domaviella* (REBEL, 1903).

Crambus lithargyrellus var. *domaviellus* REBEL, 1903, Ann. Naturh. Hofmus. Wien, 18: pl. 5, fig. 20.

Montane form from Bosnia and Herzegovina. It flies from 1600 to 2000 m. Fore wings whitish, silvery-grey.

ab. *aequalella* (SCHAWERDA, 1913), Verh. Zool.-bot. Ges. Wien 63: 167.

Two males from Gacko and Nevesinje (Herzegovina) with dark yellow fore wings without longitudinal clearings.

Male genitalia [pl. XLII, fig. 5]: uncus and gnathos strongly elongated. Their length corresponds to that of the dorsal edge of tegumen. Uncus several times wider than the slender, narrow gnathos; pointed at the end. Gnathos at the end slightly thickened, bluntly truncate. Saccus very narrow and elongated. Pars basalis developed as a strong shovel-like fold. Dorsal edge of pars basalis a little wavy. This fold is concave from inside and slightly bent outwardly. The separation of pars basalis and the rest of valva distinct. Beside pars basalis no other processes on valva. Valva strongly elongated, its width corresponds more or less with the length of pars basalis. Aedeagus

distinctly shorter than the whole copulatory apparatus, narrow, straight. In the aedeagus about fifteen cornuti on almost its whole length. These cornuti, except a few basal ones, are almost equal in size. They are rather large, slightly curved.

In female genitalia [pl. LVII, fig. 4] lamella subgenitalis wide. Gonapophyses anteriores appear as triangular thickenings of lamella subgenitalis with wide base. The accretion of lamella subgenitalis with ostium bursae strong. Ostium bursae tubular with incised dorsal edge which forms two distinct horns. Ostium bursae slightly bent and distinctly separated from the less sclerotized ductus bursae. Ductus bursae rather weakly sclerotized with slight longitudinal ribbing. Bursa copulatrix transparent with one small, star-like signum.

Catoptria lythargyrella (HBN.) is a widely distributed species. Not found in Scandinavia, in Great Britain very rare. In Central Europe it behaves as a lowland species; in Poland it occurs also only in lowlands, being found only in sandy regions as a distinct psammophile. In the Balkans on the other hand it reaches to 2000 m. In Poland it occurs from the middle of August to the beginning of September.

Examined material:

France: 4 males and 1 female: „Courthézon près Orange Vaucluse, 15—30 VIII 1951, coll. CH. FISCHER, 80—100 m“, author's coll.

Austria: 4 males from Tirol, leg. BURMANN, author's coll.

Hungary: 1 male: „Kamarae., 1929 VIII 28, Budapest, SCHMIDT“, author's coll.

Poland: 8 males: „Poznań Główniec, 25 VIII 1950, A. SZMYT leg.“, author's coll. 51 males and females from environs of Warszawa: Puszcza Kampinoska — Wydma Łuże, VIII 1949—1952, author's coll. 14 males from Podkowa Leśna, distr. Błonie, 25 VIII 1949, author's coll. 2 males from Ligota ad Katowice, VIII, author's coll.

USSR: 1 male: „Podole Połudn. Str. Berdykowiec distr. Borszczów, 21 IX 1935, ŚWIDERSKI“, author's coll.

Genus *Pediasia* HÜBNER, 1825

Typus generis: *Tinea fascelinella* HÜBNER

Crambus FABRICIUS, 1798, Supplementum Entomologiae Systematicae (partim).

Chilo GERMAR & ZINCKEN, 1817, Magazin für Entomologiae (partim).

Pediasia HÜBNER, 1825, Verzeichniss bekannter Schmettlinge (partim).

The most important features characterizing this genus are found in the genitalia. In females on bursa copulatrix signa always absent. In male there always appears well developed pars basalis which can be provided with a secondary process at its base. No second lateral or ventral process on valva. Externally the species of the genus *Pediasia* HBN. stand rather close to those of the genus *Agriphila* HBN. There is always no light — coloured basal stripe on the fore wings. There always appear though sometimes very strongly reduced — two transverse bands. Frons never with conical protuberance, which is a feature very characteristic for many species of the genus *Agriphila* HBN. In principle the genus *Pediasia* HBN. consists of two rather distant groups between which there are no intermediate forms. I wrote about this in Part VI of my Studies (1953) while discussing the characteristics of the genus *Pediasia* HBN. This discussion was confined to the species assembled in the groups *P. fascelinella* (HBN.) and *P. contaminella* (HBN.). I join these groups into one section, while to the second section I refer such species as *P. matricella* (TREITSCH.), *P. bolivarella* (SCHMIDT.) and those related to them. In Part VI of my Studies I stated that it is difficult to ascertain the degree of relation of these species with those of the first section. Now after thorough investigation of the genitalia of species belonging to the group *P. matricella* (TREITSCH.) and *P. desertella* (LED.) I think that many facts speak for its isolation into a distinct genus. These facts are for example: a connection of lamella subgenitalis with ostium bursae quite different than in the species of the first section. However, I do not separate them for two reasons: first, to avoid a too great desintegration of the group *Crambus* F. s. l., second, after the investigation of the genitalia of several Nearctic species of the genus *Pediasia* HBN. I found that a much greater heterogeneity is evident here in the structure of the genitalia than in European forms. Therefore, if both European sections were considered as distinct genera, perhaps several further sections parallel to them should be considered as genera too. This would lead to a too great desintegration of the group in question. I think that this problem could be solved better after a thorough investigation

of American species of the genus *Pediasia* HBN. My investigations in this respect are in the initial stage.

Because both sections of the genus *Pediasia* HBN. differ considerably, the characteristics of the genus *Pediasia* HBN. is very short, a more detailed one can be given for each of the two sections.

The geographical distribution of the genus *Pediasia* HBN. is only fragmentarily known to me. In the whole Holarctis it is represented very numerously. Some species of the genus *Pediasia* HBN. reach South Africa. In New Zealand they are absent. I have no data of their appearance in Australia and the Neotropical Region.

Section A

As I mentioned, I divide the European species of the genus *Pediasia* HBN. into two sections. The first of them compriss the majority of species. The groups *P. fascelinella* (HBN.), *P. contaminella* (HBN.), *P. truncatella* (ZETT.) and *P. steppicollis* (ZERNY.) belong here. In male genitalia pars basalis very well developed as a long narrow hook-like process, sharp at the end. This process reaches almost always to the end of valva and is usually bent. It is visibly separated from valva at its base and is distinctly thickened there. It is very strongly sclerotized and very distinctly bordered from valva. Pars basalis is never bifurcated near its end but it has sometimes a secondary process at its base which has the shape of a short prong, as for example in *P. truncatella* (ZETT.) Beside pars basalis no other process present on valva. Uncus always pointed, its length corresponds with that of gnathos. Gnathos most often hooked. Tegumen with edges thickened list-wise. Female genitalia are characteristic by a very weak membraneous connection of lamella subgenitalis with ostium bursae. Gonapophyses anteriores long, narrow. Ostium bursae does not differ from the rest of ductus bursae. Ductus bursae long, sometimes it is several times longer than the whole abdomen, as for example in *P. fascelinella* (HBN.) and *P. luteella* (DEN. & SCHIFF.). Ductus bursae is most often strongly sclerotized, longitudinally ribbed on the surface. Signum on bursa copu-

latrix always absent. In their coloration the species of the section „A“ resemble rather those of the section „B“. On the fore wings no light-coloured basal stripe. Two transverse bands appear, which sometimes are strongly reduced, almost invisible. Fore wings sometimes unicolour.

The species of the section „A“ are generally slightly differentiated, particularly in the structure of their genitalia. First of all, the male genitalia are in many cases delusively similar between species. Even species so distant in coloration and design as *P. fascelinella* (HBN.) and *P. luteella* (DEN. & SCHIFF.) have quite identical male genitalia. Genitalia delusively similar to those of these species are found also in such species as *P. epineura* (MEYR.) and *P. jucundella* (H.-S.). There are distinct differences only in the size of aedeagus and a stronger or weaker structure of the genitalia. I did not observe a great variability in the size of aedeagus in the species mentioned above but nevertheless I am not quite sure whether *P. adamczewskii* BLESZ. and *P. sareptella* BLESZ. are distinct species or only subspecies of *P. fascelinella* (HBN.) or *P. jucundella* (H.-S.). I established the former species according to a different size of aedeagus and differences in the coloration of the wings.

GROUP 1

Group type: *Pediasia fascelinella* (HBN.)

It is a very numerous group. In case of some species of this group it is difficult to state whether they are distinct species or only subspecies. Some of them are known as yet from one specimen. The considerable variability of the species of this group, as well as weakly specialized specific differences, suggest that it is a group possessing at present a great potential strength of evolution. Several remarks concerning the systematics and characteristics of this group was published by me in part VII of my Studies (1952). In their genitalia all species of this group are characteristic by a very strong, and in all cases similar, development of pars basalis which has

the shape of a long, strongly sclerotized, usually curved hook, reaching almost to the end of valva. This hook is distinctly bordered from valva and separated from it at its base. Uncus uniformly built in all species of this group, terminated by a delicate little prong. Gnathos always ended with small hook. Aedeagus with one or several cornuti. There are no species without cornuti in the aedeagus. In female there appear relatively very long gonapophyses anteriores and posteriores. The joint of ostium bursae with ductus bursae very weak. Ostium bursae differs neither by the shape nor by the degree of sclerotization from the rest of ductus bursae. Ductus bursae long, sometimes presents several loops. The most important specific features in the male genitalia are: the size of aedeagus, the number of cornuti, their shape and length. In females the length of ductus bursae, the number of loops, the degree of sclerotization of ductus bursae are very important. In the habitus the species of the group in question are characteristic by the very deep serration of male antennae which are sometimes rather pectinate. The ground of the fore wings is generally brown or yellowish-brown with veins marked paler. The cilia of fore wings almost always several times interrupted by white. The species of the group *P. fascelinella* (HBN.) are distributed mainly in Eastern Europe. Only a few species appear in Western Europe. All species of the group in question except *P. pedriolella* (DUP.) are lowland elements.

***Pediasia pedriolella* (DUPONCHEL, 1836)**

[Pl. XLIII, fig. 1, pl. LIX, fig. 1, pl. LXXXVI, fig. 1—2]

Crambus pedriolellus DUPONCHEL, 1836, Hist. Nat. Lép. France 10: 134, pl. 275, fig. 6.

Tinea spuriella HÜBNER & GEYER, 1834—1836, Samml. Eur. Schmett.: pl. 71, fig. 471.

Crambus Aridellus HERRICH-SCHÄFFER, 1849, (nec THUNBERG), Syst. Bearb. Schmett. Eur. 4: 61, Sppl. 17, 18.

Crambus spuriellus ZELLER, 1863, Chil. Cramb. Gen. Spec.: 36.

Pediasia pedriolella BLESZYŃSKI, 1952, Pol. Pis. Ent. 22: 145, pl. 1, fig. 3, pl. 4, fig. 17, pl. 6, fig. 26, 27.

Antennae brown unicolour, in male deeply serrate, in female very shallowly serrate. Palps brown, from outside sharply

spotted pale, whitish from inside. Frons whitish, flat, rounded. Head whitish-greyish. Patagia greyish on sides, whitish in the middle. Tegulae and thorax brownish-greyish. Length of the fore wing varies from 13 to 14 mm, width in male about 6 mm, in female about 4,5 mm. Costal margin in male as well as in female almost straight, apex in male rounded, in female pointed. Outer margin in male less oblique than in female, in male more bent outwards than in female. Ground of fore wing dull, light brownish-grey. The pale streaks running on the veins very indistinct. On the grey ground of the wing a suffusion of dark brown scales. Outer and inner band visibly darker than ground of wing, of somewhat similar shape as in *P. fascelinella* (HBN.). Dark dots at the outer margin. Cilia on the outer margin with rather visible lustre. It is several times sharply interrupted by whitish. Hind wings with delicate lustre. Cilia white.

Male genitalia [pl. XLIII, fig. 1] similar in its constitution and shape as in *P. fascelinella* (HBN.). Uncus somewhat more slender than in *P. fascelinella* (HBN.). Gnathos, valva and pars basalis delusively similar as in *P. fascelinella* (HBN.). The most important feature distinguishing the species in question is the size of aedeagus which is shorter than the whole copulatory apparatus, while in *P. fascelinella* (HBN.) it is visibly longer than the copulatory apparatus. Besides aedeagus of *P. pedriolella* (DUP.) is distinctly narrower than in *P. fascelinella* (HBN.). Cornutus rather similar as in *P. fascelinella* (HBN.).

In female genitalia [pl. LIX, fig. 1] gonapophyses anteriores and posteriores long, slender. Ductus bursae without loops, long, strongly sclerotized on its whole length, with ribbed surface. Ostium bursae only a little wider than the rest of ductus bursae. Bursa copulatrix transparent, rather small, without signum.

P. pedriolella (DUP.) is an high alpine element, however, as I already wrote in my work on the *P. fascelinella* (HBN.) — group (1952) I found in the collection of the Institute of Zoology of the Polish Academy of Sciences in Warszawa two specimens with the labels: „Sarepta CHR.“. Providing these labels are correct, then *P. pedriolella* (DUP.) would be a steppe-alpine element. Such elements are known among *Lepidoptera*, however,

a distribution of this species so strongly disjunctive seems strange. In the Alps *P. pedriolella* (DUP.) occurs in July, generally in high altitudes.

The priority of the name *Crambus pedriolellus* DUP. before the name *Tinea spuriella* HBN. & GEYER was shown by DE JOANNIS (1915). This opinion may, however, be incorrect for HEMMING (1937) gives 2 I 1834—1836 as the date of appearance of table 71 of Sammlung Europäischer Schmetterlinge on which *Tinea spuriella* is represented while DUPONCHEL's name was undoubtedly published in 1836.

Examined material:

Alps: 1 male and 1 female: „Alps“, author's coll. 8 males: „Teriolis Rofenberg 4 VIII 1951, 2400 m, J. KLIMESCH“, author's coll. 9 males: „Tirol Ötztal Rofen, 2000 m, 4 VIII 1951, BURMANN, Innsbruck“, author's coll. 1 female: „Stilfser Joch“, author's coll. 7 males and females from Switzerland (Wallis, Engadin), coll. I. Z. P. A. S., Warszawa.

USSR: 2 males: „1871 Rossia m. Sarepta CHR.“, coll. I. Z. P. A. S., Warszawa.

***Pediasia jucundella* (HERRICH-SCHÄFFER, 1849)**

[Pl. XLIII, fig. 2, pl. LIX, fig. 2, pl. LXXXVI, fig. 3—4]

Crambus Jucundellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 62, Sppl. 11—14.

Pediasia jucundella BLESZYŃSKI, 1952, Pol. Pis. Ent. 22: 152, pl. 2, fig. 8, pl. 4, fig. 18, pl. 7, pl. 7, fig. 38—41.

Antennae brown, of a shape similar as in *P. fascelinella* (HBN.). Palps brown, from outside finely spotted pale, from inside pale. Frons flat, rounded, whitish with brownish spotting. Head whitish or white-brownish. Patagia brown on sides, in the middle usually paler. Thorax and tegulae brownish. Length of the fore wing varies from 8,5 to 12,5 mm, width from 2,7 to 4,5 mm. Shape of the fore wing of male similar as in *P. fascelinella* (HBN.). In female costal margin distinctly more convex, and apex more pointed than in male. Ground of the fore wing and its design delusively similar as in *P. fascelinella* (HBN.). The design sometimes strongly reduced. Cilia of the fore wings similarly coloured as in *P. fascelinella* (HBN.). Hind wings generally distinctly paler than in *P. fascelinella* (HBN.) with

always, white cilia, which in *P. fascelinella* (HBN.) rarely are whitish, rather greyish.

ab. *festivella* (HERRICH-SCHÄFFER, 1849).

Crambus festivellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 62, Sppl. 19—20.

An aberration with weakly developed design of the fore wings.

ab. *simplicella* (SZENT-IVÁNY & UHRIK-MÉSZÁROS, 1942).

Crambus jucundellus ab. *simplicellus* SZENT IVÁNY & UHRIK-MÉSZÁROS, 1942, Ann. Hist.-Nat. Mus. Nat. Hung. Pars Zool. 35: 117, pl. 4, fig. 2.

The specimens in which the design of the fore wings is almost completely reduced. From Budapest.

ab. *fumosella* (CARADJA).

I do not know the original description of this form. I have obtained one specimen from DR. H. G. AMSEL of Buchenberg. This specimen (from Roumania) has a dark-grey ground of the fore wings.

Male genitalia [pl. XLIII, fig. 2] similar as in *P. fascelinella* (HBN.). The one distinct feature distinguishing this species from *P. fascelinella* (HBN.) is the size of aedeagus, which in *P. jucundella* (H.-S.) corresponds more or less to the length of the whole copulatory apparatus, while in *P. fascelinella* (HBN.) it is distinctly longer than the whole apparatus. We find greater differences between these two species in the female genitalia.

Ductus bursae in *P. jucundella* (H.-S.) [pl. LIX, fig. 2] has only 4 loops, while in *P. fascelinella* (HBN.) there are numerous loops. Ductus bursae in *P. jucundella* (H.-S.) is somewhat wider than in *P. fascelinella* (HBN.). On its whole length it is strongly sclerotized, with ribbed surface. Bursa copulatrix transparent; signum absent.

P. jucundella (H.-S.) is a Pontic element, reaching in Hungary the Western border of its distribution. LHOMME (1935) reported in his Catalogue this species from France, but I think that this was due to a confusion of this species with the delu-

sively similar *P. fascelinella* (HBN.). *P. jucundella* (H. S.) occurs in August in dry xerothermic regions

Examined material:

Hungary: 1 male and 2 females: „Budafok, UHRİK, 1911 VIII 20“, author's coll. 1 male: „Budafok, 1911 VIII 20“ [ab. *festivella* (H.-S.)], author's coll. 1 male and 1 female: „Budapest, UHRİK, 1935 VIII 15“, [ab. *festivella* (H.-S.)], author's coll. 1 male: „Budafok, UHRİK, 1911 VIII 15“, „cotypus“ [ab. *simplicella* (SZENT-IVÁNY & UHRİK)], author's coll. 1 female: „Budapest, UHRİK, 1928 VIII 12“, [ab. *simplicella* (SZENT-IVÁNY & UHRİK)] — cotypus, author's coll.

Roumania: 1 male: „1936 VIII 17, Tecuci auf Licht, Rumänien“, [ab. *fumosella* (CAR.)], coll. AMSEL, Buchenberg.

USSR: 1 male from Ural (Guberninskaja), coll. I. Z. P. A. S., Warszawa. 2 spec.: „Rossia m. Sarepta“, coll. I. Z. P. A. S., Warszawa.

***Pediasia sareptella* BŁESZYŃSKI, 1952**

[Pl. XLIII, fig. 4, pl. LXXXVII, fig. 2]

Pediasia sareptella BŁESZYŃSKI, 1952, Pol. Pis. Ent. 22: 150, pl. 2, fig. 7, pl. 8, fig. 42.

Male: antennae light brown, unicolour, of a similar shape as in *P. fascelinella* (HBN.). Palps light yellow-brownish from outside, indistinctly spotted paler, white from inside. Frons flat, rounded, white. Head whitish. Patagia, thorax, and tegulae light yellow-brownish. Shape of the fore wing similar as in *P. fascelinella* (HBN.). Its length 11,5 mm, width 4 mm. Ground of the fore wing with very weak lustre, almost dull, light yellow-brownish, rather similar as in *P. pudibundella* (H.-S.). The white streaks on veins weakly contrasting with pale ground of wing. Small dark dots at the outer margin. The transverse bands a little darker than ground, light-brownish, of similar shape as in *P. fascelinella* (HBN.) or *P. jucundella* (H.-S.). Cilia on the outer margin with distinct lustre. Basal streak of scales strongly lustrous, but not with metallic lustre. It is a very important feature by which this species differs externally from the light-coloured specimens of *P. soffneri* BŁESZ., in which this basal streak has distinctly metallic lustre. Hind wings white with snow-white cilia.

Male genitalia [pl. XLIII, fig. 4] similar as in *P. fascelinella* (HBN.) and other related species, but more weakly built and

a little more elongated than in these species. Aedeagus a little longer than the whole copulatory apparatus, but distinctly shorter than in *P. fascelinella* (HBN.).

Only the holotype from Sarepta is known thus far. It is labelled: „1871 Rossia m. Sarepta Z. CHR.“, Coll. I. Z. P. A. S., Warszawa.

***Pediasia saisanella* BLESZYŃSKI, 1953**

[Pl. LXII, fig. 4]

Pediasia saisanella BLESZYŃSKI, 1953, Ann. Mus. Zool. Pol. 15: 106. pl. 15, fig. 5, pl. 16, fig. 12.

Female: antennae brown, unicolour, very flatly serrate. Palps in shape and colour similar as in *P. fascelinella* (HBN.) or *P. jucundella* (H.-S.). Frons slightly rounded, white. Head yellowish. Patagia, thorax and tegulae light brownish. Length of the fore wing about 11,5 mm, width about 3,8 mm. Fore wing relatively more slender than in strongly related *P. jucundella* (H.-S.). Costal margin delicately convex, apex rounded. Outer margin almost straight, while in *P. jucundella* (H.-S.) it is visibly oblique. Ground of the fore wing dull, light brownish, below the costal margin visibly whitish. The veins rather distinctly visible, similarly as in typical specimens of *P. jucundella* (H.-S.). Outer and inner band brown, distinct, of similar shape as in *P. jucundella* (H.-S.) or *P. fascelinella* (HBN.). Outer band from outside bordered by whitish. Cilia on the outer margin distinctly lustrous, but this lustre is less strong than in *P. fascelinella* (HBN.). Cilia several times interrupted by paler colour. Basal streak of scales without metallic lustre. Hind wings almost dull, white, very delicately darkened brownish in places. Cilia of hind wings snow-white.

Female genitalia [pl. LXII, fig. 4]: gonapophyses anteriores and posteriores long, slender, similar as in *P. jucundella* (H.-S.). Ostium bursae visibly wider than ductus bursae. Ductus bursae long, on its whole length strongly sclerotized, with ribbed surface. It reaches thorax, while in *P. jucundella* (H.-S.) it reaches only a little behind half the length of abdomen. In *P. jucundella* (H.-S.) ductus bursae forms four loops,

while in *P. saisanella* BLESZ. it forms only two. The length of ductus bursae of *P. saisanella* BLESZ. is 1/4 longer than in *P. jucundella* (H.-S.). Bursa copulatrix transparent. No signum.

Until not long ago *P. saisanella* BLESZ. was known only from 1 female (Holotypus) from Saisan. At present I received for investigation several specimens labelled as „*Crambus epineurus* MEYR.“ from DR. H. G. AMSEL of Buchenberg (Germany). One specimen from Crimea proved to belong without doubt to *P. saisanella* BLESZ. Probably it is a species widely distributed, and only overlooked till now.

Examined material:

Holotype: „Saisan, HABERHAUER“, „ex coll. STAUDINGER“, coll. Zoological Museum of the Humboldt University, Berlin.

1 female spec. from Crimea, coll. AMSEL.

Pediasia adamczewskii BLESZYŃSKI, 1952

[Pl. XLIII, fig. 3, pl. LXXXVII, fig. 1]

Pediasia adamczewskii BLESZYŃSKI, 1952, Pol. Pis. Ent. 22: 150, pl. 1, fig. 6, pl. 8, fig. 43.

Antennae brown, of similar shape as in *P. fascelinella* (HBN.). Palps of similar colouring as in *P. fascelinella* (HBN.). Frons flat, rounded, white. Head whitish. Patagia, thorax, and tegulae light brownish. Shape of fore wing similar as in *P. fascelinella* (HBN.). Length of the fore wing 11,5 mm, width 4 mm. Ground of the fore wing dull, brown, with almost quite fused design. Below costal margin the ground is visibly lighter. Paler streaks on the veins disappearing. Outer and inner band of similar shape as in *P. fascelinella* (HBN.), very indistinct. Dark dots at the outer margin slightly developed. Cilia on the outer margin distinctly lustrous. Pale interruptions on cilia less distinct than in *P. fascelinella* (HBN.). Hind wings with delicate lustre, whitish-grey, with white cilia.

Male genitalia [pl. XLIII, fig. 3] very similar as in *P. fascelinella* (HBN.). Pars basalis straight, somewhat bent downwards, while in *P. fascelinella* (HBN.) it is distinctly curved upwards. Aedeagus distinctly shorter than in *P. fascelinella* (HBN.). Its length 1,8 mm [in *P. fascelinella* (HBN.) 2,37—2,4 mm]. Cornutus shorter than in *P. fascelinella* (HBN.) (0,36 mm).

Only the holotype from Ural is known thus far. It is labelled: „F. 6. 8. 97 Ural m. Guberli[nskaja]“, coll. I. Z. P. A. S., Warszawa.

***Pediasia fascelinella* (HÜBNER, 1810—1813)**

[Pl. XLVI, fig. 1, pl. LIX, fig. 5, pl. LXXXVII, fig. 3—6]

? *Tinea aridella* THUNBERG, 1788, Dissert. Ent.: 96, pl. 4, fig. 1.

Tinea fascelinella HÜBNER, 1810—1813, Samml. Eur. Schmett.: pl. 54, fig. 368.

Chilo fascelinellus GERMAR & ZINCKEN, 1817, Magazin Entomol. 2: 102.

Pediasia Fascelinalis HÜBNER, 1825, Verz. Bek. Schmett.: 365.

Tinea Treitschkeella SODOFSKY, 1830, Bull. Mosc. 2: 76, pl. 1, fig. 9.

Crambus fascelinellus DUPONCHEL, 1836, Hist. Nat. Lép. France 10: 122, pl. 273, fig. 3.

Crambus aridellus ZELLER, 1839, Isis: 174.

Crambus Pedriolellus STANTON, 1849, (nec DUPONCHEL), Syst. Catal.: 1.

Pediasia fascelinella BLESZYŃSKI, 1952, Pol. Pis. Ent. 22: 153, pl. 3, fig. 15, 16, pl. 8, fig. 44—47.

Antennae brown, unicolour, in male deeply serrate, in female very flatly serrate. Palps brown, finely spotted paler outside, pale inside. Frons flat, rounded, brownish-whitish or whitish. Head white to dirty whitish. Patagia brownish, usually paler in the middle. Thorax and tegulae brownish, in places whitish. Length of the fore wing varies from 11,5 to 13,2 mm, width from 3,4 to 5 mm. Costal margin almost straight, apex rounded (in both sexes) outer margin distinctly convex. Sexual dimorphism not visible in the shape of wings. Ground of the fore wing varies from light yellowish-brown to dark grey-brown. Alongside the veins run pale streaks, more or less distinct. Two transverse bands, generally not sharply delineated, sometime fusing with the ground of wing. Inner band angled above middle of wing's width, below strongly oblique. Outer band with distinct tooth above the dorsal margin. This band is bordered paler from outside. Several small dark dots at the outer margin. Cilia on the outer margin lustrous, basal streak of scales with stronger lustre than the rest of cilia. Cilia several times interrupted by white. Hind wings almost dull, greyish, with dirty whitish-grey cilia.

P. fascelinella (HBN.) is a species externally delusively similar to *P. jucundella* (H.-S.); however, in *P. jucundella* (H.-S.) there is sexual dimorphism in the shape of the fore wing, which is not the case in *P. fascelinella* (HBN.). Besides, *P. jucundella* (H.-S.) has usually distinctly paler cilia of the hind wings than *P. fascelinella* (HBN.). *P. jucundella* (H.-S.) is usually smaller than *P. fascelinella* (HBN.).

Male genitalia [pl. XLVI, fig. 1]: uncus pointed with small prong, gnathos ended with small hook characteristic for all species of the group in question. Valva of rather variable shape, always rounded. Pars basalis very strongly developed as a long, strongly sclerotized, distinctly curved hook, reaching almost to the end of valva. It is detached at the base of valva, and distinctly bordered from it. No second process on valva. Aedeagus enormous (2,37 to 2,4 mm long). It is distinctly longer than the whole copulatory apparatus. Single cornutus (0,43—0,46 mm long).

In female [pl. LIX, fig. 5] gonapophyses anteriores and posteriores very long, narrow. Ductus bursae strongly sclerotized on its whole length, with ribbed surface, forms numerous loops. Bursa copulatrix transparent. No signum.

In male genitalia of related *P. jucundella* (H.-S.) aedeagus is only a little longer than the whole copulatory apparatus. In female genitalia of *P. jucundella* (H.-S.) ductus bursae distinctly shorter than in the species in question. It forms only 4 loops. From the related *P. sareptella* BLESZ. and *P. adamczewskii* BLESZ. the species in question differs by the size of the aedeagus, which in these two species is distinctly shorter than in *P. fascelinella* (HBN.).

	Length of whole copulatory apparatus	Length of aedeagus	Length of cornutus
<i>P. fascelinella</i> (HBN.)	1,65—1,72 mm	2,37—2,4 mm	0,43—0,46 mm
<i>P. sareptella</i> BLESZ.	1,57 mm	1,80 mm	0,36 mm
<i>P. adamczewskii</i> BLESZ.	1,41 mm	1,69 mm	0,37 mm
<i>P. jucundella</i> (H.-S.)	1,4—1,5 mm	ca 1,7 mm	ca 0,36 mm

Sure locations of *P. fascelinella* (HBN.) are known thus far only from Europe where it is rather widely distributed. It appears from May to September in dry lowland regions. The caterpillar feeds on grasses.

Examined material:

Denmark: 2 males from Rungstedt Kyst, leg. LANGER, author's coll.

Holland: 2 males: „Hilversum, 2 VII 1934, coll. DOETS“, author's coll.

Germany: 1 male: „Nieder-Weser Badener Berge, Lichtfang, 13 VIII 1950, E. JÄCKH“, author's coll.

Poland: 4 males from Kretowiny, distr. Morag, 15—25 VII 1953, author's coll. 9 males and females from Łańsk—Rybaki, distr. Olsztyn, 21 VII 1952, author's coll. 4 spec from Międzyzdroje (Wolin Isl.), coll. I. Z. P. A. S., Warszawa. 3 spec. from Hel (Chalupy), leg. ŚWIDERSKI, coll. I. Z. P. A. S., Warszawa. 3 males from Puszcza Kampinoska—Wydma Łuże, 22 VIII 1950, author's coll. 1 female from Wólka Kozłowska distr. Radzymin, 10 VIII 1947, author's coll. 1 female from Podkowa Leśna, distr. Błonie, 25 VIII 1949, author's coll. Several males and females from environs of Toruń coll. Zool. Inst. of the M. Kopernik University in Toruń. 1 female from Bielinek n. Odrą, 17 VIII, author's coll. 35 males and females from Podgórk, distr. Kraków, 19 V — 4 IX 1946—1952, author's coll.

USSR: 1 male: „Krzywce p. Borszczów, 18 VI 1936, leg. S. TOLL“, (Western Podolia), coll. TOLL. 1 female from Sarepta, coll. British Museum (Nat. Hist.), London.

***Pediasia luteella* (DENIS & SCHIFFERMÜLLER, 1775)**

[Pl. XLVI, fig. 2, pl. LIX, fig. 6, pl. LXXXVII, fig. 7—8, pl. LXXXVIII fig. 1—2]

Tinea luteella DENIS & SCHIFFERMÜLLER, 1775, Syst. Verz. Schmett. Wien. Geg.: 134.

Tinea ochrella HÜBNER, 1796, Samml. Eur. Schmett.: 24, pl. 8, fig. 55 ♂.

Tinea exoletella HÜBNER, 1796, Samml. Eur. Schmett.: 30, pl. 7, fig. 48 ♀.

Chilo Ochrellus GERMAR & ZINCKEN, 1817, Magazin Entomol. 2: 100.

Pediasia Lutealis HÜBNER, 1825, Verz. Bek. Schmett.: 365.

Ecoria Convolutalis HÜBNER, 1825, (nec DENIS & SCHIFFERMÜLLER), Verz. Bek. Schmett.: 367 ♀.

Chilo Luteellus TREITSCHKE, 1832, Schmett. Eur. 9: 125.

Crambus luteellus STEPHENS, 1834, Illustr. Brit. Ent. *Haustellata* 4: 327.

Pediasia luteella BLESZYŃSKI, 1952, Pol. Pis. Ent. 22: 153, pl. 3, fig. 13, 14, pl. 9, fig. 50—53.

Antennae brown, deeply serrate in male, in female setaceous, dorsally in male yellowish-brownish, with somewhat darker

rings, in female creamy-white. Patagia in male rusty-brown outside, in female often spotted creamy, always paler inside. Head creamy or grey-brownish, generally lighter coloured than thorax. Thorax and patagia similarly coloured as the fore wing. Length of the fore wing varies from 10,5 to 12 mm, width 4—5 mm. Fore wing in male brick-coloured, generally without a trace of design, only sometimes two transverse bands are visible as very indistinct streaks, somewhat darker than ground of wing. In such cases the outer band distinctly angled tooth-like above the dorsal margin while the inner one is strongly oblique, similarly as in *P. fascelinella* (HBN.). Fore wing dull, without lustre. Cilia on the outer margin unicolour, similarly coloured as ground of wing. No dark dots at the outer margin. Hind wings grey-brownish, usually with darkly bordered outer margin. Cilia creamy, sometimes darkened greyish or brown, usually with darker streak of basal scales. In female fore wing light grey to dark brown-grey. Usually delicate palings alongside the veins. The bands appear rarely, fragmentarically, as very indistinct traces. Shape of the fore wing of female distinctly different than in male. Costal margin a little convex, apex somewhat pointed, outer margin more oblique than in male. Hind wings similarly coloured as in male.

Male genitalia [pl. XLVI, fig. 2] delusively similar as in *P. fascelinella* (HBN.).

In female genitalia [pl. LIX, fig. 6] ductus bursae very long, arranged in numerous loops the number of which, however, is distinctly smaller than in *P. fascelinella* (HBN.). Ductus bursae strongly sclerotized and only in its terminal part near bursa copulatrix it is transparent, while in *P. fascelinella* (HBN.) it is strongly sclerotized on its whole length. Bursa copulatrix rather transparent. No signa.

P. luteella (DEN. & SCHIFF.) is a species widely distributed in Europe. Eastwards it reaches Central Asia (Ili, Darkent). It occurs in dry places from May to the middle of August, being a lowland element.

Examined material:

France: 1 male: „Bollwiller Ht.-Rhin, 5 VI 1944, CH. FICHER“, author's coll. 1 male: „Cernay et environs Ht.-Rhin, 20 VI 1930, alt. 3—

400 m, CH. FISCHER“, author's coll. 1 male: „For de la Harot Grünhütte, 5 VI 1948, CH. FISCHER“, author's coll.

Germany: 2 males: „Süd-Pfalz Albersweiler, 20 V 1949, leg. DE LATTIN“ author's coll.

Austria: 1 male: „Graz, 1 VII 1905“, author's coll. 2 males from Tirol leg. BURMANN, author's coll. 1 male: „4 VII 1946, Heisburg Kärnten leg. THURNER“, author's coll.

Hungary: 1 female: „Királyhalom, DR. SCHMIDT, 1933 VII 20“, author's coll. 1 male spec.: „Ujszász, SCHMIDT, 1911 VI 6“, author's coll.

Poland: 15 males and females from Kretowiny, distr. Morąg, 15—25 VII 1953, author's coll. 6 males and females from Łańsk—Rybaki, distr. Olsztyn, 21—24 VII 1952, author's coll. 1 male and 1 female „Poznań Dębina, 9 VI [and] 6 VII 1950, A. SZMYT leg.“, author's coll. 1 male from Wólka Kozłowska ad Thuszcz, distr. Radzymin, 10 VIII 1948, author's coll. 1 male from Chotel Czerwony, distr. Busko 2 VI 1947, author's coll. 55 males and females from environs of Kraków (Podgórk, Mydlniki Przegonia), 29 V — 1 VIII 1942—1952, author's coll.

USSR: 3 females spec. from Mińsk, author's coll. Several males and females from Western Podolia (Zaleszczyki, Dźwinogród, Borszczów, Bedrykowce), coll. I. Z. P. A. S., Warszawa.

Pediasia epineura (MEYRICK, 1883)

[Pl. XLIII, fig. 5, pl. LX, fig. 1, pl. LXXXVI, fig. 6—8]

Crambus ramosellus ZELLER, 1863, Chil. Cramb. Gen. Spec.: 38, (nom. praeoc).

Crambus epineurus MEYRICK, 1883, Ent. Monthly Mag.: 20: 141.

Pediasia epineura BLESZYŃSKI, 1952, Pol. Pis. Ent. 22: 146, pl. 1, fig. 4—5, pl. 5, fig. 23—25, pl. 6, fig. 29—33, pl. 7, fig. 34—36.

Antennae unicolour, light brown, in male pectinate, in female very flatly serrate. Palps brown outside, pale brownish to white inside and dorsally. Frons pale yellowish-brownish to white, rather flat, rounded. Head similarly coloured as frons. Patagia brown, sometimes lighter in the middle. Thorax and tegulae brown. Length of the fore wing varies from 11 to 12,5 mm, width from 4 to 4,5 mm. Fore wing of males is distinctly wider, and more widened outwardly than in females. Costal margin almost straight, in males very delicately concave in the middle. Apex in male rounded, in female rather pointed. Outer margin in male distinctly bent outwards, that in female almost straight, in both sexes oblique. Ground of the fore wing light brown. The veins more or less distinctly paler.

Outer band oblique, above the dorsal margin with a tooth pointed towards wing base. Inner band generally indistinct, strongly oblique. The bands brown, the outer one sometimes bordered with whitish. Dark dots at the outer margin well developed. Cilia on the outer margin lustrous, four times more or less visibly narrowly interrupted by white, basal streak of scales with rather distinct metallic lustre. Hind wings whitish or very pale whitish-brownish, lustrous. Cilia of the hind wings snow-white.

Male genitalia [pl. XLIII, fig. 5] similar as in *P. fascelinella* (HBN.) but of somewhat weaker structure, aedeagus distinctly shorter than in *P. fascelinella* (HBN.). The remaining parts of the male genitalia delusively similar in shape as in *P. fascelinella* (HBN.).

In female genitalia [pl. LX, fig. 1] gonapophyses anteriores and posteriores long, slender. Ductus bursae in its whole length strongly sclerotized, with ribbed surface, without loops, visibly curved. Bursa copulatrix transparent. No signum. Ductus bursae of the type from Sarepta [coll. British Museum (Nat. Hist.)] distinctly shorter than in the several females from South-Eastern Europe examined by me.

I have discussed the problem of *P. epineura* (MEYR.) more widely in part VII of my Studies (1952). Some more important facts, however, should be mentioned here. *P. epineura* (MEYR.) was described by ZELLER (1863) as *Crambus ramosellus*. Then MEYRICK (1883) gave for it a nomen novum, *Crambus epineurus* MEYR. for before 1863 (date of description of *Crambus ramosellus* ZELL.) a species of *Crambus* F. from New Zealand was described by DOUBLEDAY (1856) under the name *Crambus ramosellus* DOUBL. MEYRICK was wrong in writing that *C. epineurus* MEYR. is a Sicilian species, for it is an East European element and was never reported from Sicily. The type of *Crambus ramosellus* ZELL. is a female from Sarepta. Genitalia of the type differs somewhat than in the several other females which I determined as belonging to *Pediasia epineura* (MEYR.). It is difficult to say whether this determination is right, for the available material of this species is still too small. One receives single specimens for investigation only. The lack of more numerous series prevents to show the extent

of variability of *P. epineura* (MEYR.). In this state and taking under consideration a great sexual dimorphism of *P. epineura* (MEYR.) it is not certain whether the males of this species correspond to the females. This problem arises also for other species of the group in question, e. g. *P. hübnerei* BLESZ. The problem of this species as well as other ones of the group *P. fascelinella* (HBN.) especially of those which are known thus far from one sex only is still open for very interesting investigations.

As I mentioned, *P. epineura* (MEYR.) is a steppe element, known at present from East Europe, Altai and Saisan.

P. epineura (MEYR.) is easily distinguished from other related species similar to it, by pectinate antennae of the male and metallic lustre of the basal streak of fore wing cilia. *C. hübnerei* BLESZ. has also pectinate antennae but it differs considerably in its genitalia from *P. epineura* (MEYR.) and rather approaches *P. pudibundella* (H.-S.). *P. hübnerei* BLESZ. has also a similar metallic lustrous basal streak of fore wing cilia. Also *P. soffneri* BLESZ. has such a streak but the males of this species have serrate and not pectinate antennae. As far as the females of *P. soffneri* BLESZ. are concerned, the question is open till now whether the allotype of *P. soffneri* BLESZ. belongs indeed to this species or to *P. epineura* (MEYR.).

Examined material from Europe:

USSR: 1 male: „ZELL. coll. 1884“, „39“, „*Ramosellus* LED. ut. 11/62“, coll. British Museum (Nat. Hist.), London. 1 female: „5/7“, „21“, „*Festivellus Sarepta* CHRIST. 75“, „ZELL. coll. 1884“, coll. British Museum (Nat. Hist.) London. 1 female: „ZELL. Coll. 1884“, „20“, coll. British Museum (Nat. Hist.), London. 1 male „Uralsk, VII 1906, BARTEL“, coll. Museum of the Natural History in Vienna. 1 male: „Ross. m. PETRY“, coll. TOLL. 2 females: „1866 Rossia m. Sarepta CHR.“, coll. I. Z. P. A. S., Warszawa. 1 male and 1 female: Rossia mer.“, author's coll.

***Pediasia pectinicornis* (REBEL, 1910)**

Crambus pectinicornis REBEL, 1910, Dtsch. Ent. Zeit. Iris **24**: 1, pl. 1, fig. 12.

Pediasia pectinicornis BLESZYŃSKI, 1952, Pol. Pis. Ent. **22**: 157, pl. 9, fig. 57.

Probably *P. pectinicornis* (REBEL) is identical with *P. epineura* (MEYR.). REBEL writes in its description that it differs from

all Palaearctic species of the genus *Crambus* F. by pectinate antennae. Because *P. epineura* (MEYR.) has similar antennae, it is possible that REBEL described *P. epineura* (MEYR.) as *Crambus pectinicornis* and considered another species as *P. epineura* (MEYR.). This problem cannot be definitely solved unless the type of the species in question be examined. I cite here REBEL's original description: „Ein einzelnes, ganz frisches ♂ von M. BARTEL in Uralsk am 6. September 1907 erbeutet, gleich ausserordentlich (dort namentlich im Juni erbeuteten) Stücken von *Crambus jucundellus* HS., unterscheidet sich aber von sämtlichen paläarktischen *Crambus*-Arten durch die mit einreihigen kräftigen Kammzähnen versehenen Fühler. Die Palpen sind etwas kürzer als bei *jucundellus*, oben weiss, nur seitlich und unten gelbbraun bestäubt. Auch Stirn und Scheitel sind weiss, der übrige Körper, wie die Beine, vorherrschend gelbbraun. Die Vfl. nach aussen deutlich erweitert, gelbbraun mit weisslichgelben, gegen den Saum breiteren Adern, deren Zwischenräume mehr oder weniger schwarzbraun bestäubt sind, so dass nur die Falte und der Vorderrand in breiterer Ausdehnung rein die gelbbraune Grundfarbe zeigen. Zwischen den Adern liegen am Saume tiefschwarze Punkte. Die breiten Fransen an ihrer Basis mit goldig glänzender Teilungslinie, hierauf, schmal weiss und in ihrer Aussenhälfte breit braunstaubig. Die Hfl. sehr hell bräunlich mit rein weissen Fransen. Die Vfl. unterseits gelbgrau mit weisslichen Adern. Vfl. Länge 12,5 mm. Die Type befindet sich in der Sammlung von CARADJA“.

***Pediasia soffneri* BLESZYŃSKI, 1952**

[Pl. XLIV, fig. 3—4, pl. LX, fig. 2, pl. LXXXVIII, fig. 5—6]

Pediasia soffneri BLESZYŃSKI, 1952, Pol. Pis. Ent. 22: 155, pl. 2, fig. 11, pl. 4, fig. 22, pl. 7, fig. 37.

Antennae brown, unicolour, in male deeply serrate, in female almost setaceous. Palps of a shape and colouring similar to *P. fascelinella* (HBN.). Frons flat, rounded, whitish. Head whitish to dirty yellow. Patagia light brownish to brown on sides, paler in the middle. Thorax and tegulae brownish. Length

of the fore wing about 12 mm, width about 5 mm. Costal margin almost straight, very delicately concave in its middle. Apex rounded, outer margin a little bent outwards. Ground of the fore wing varies from light sandy colour to brown. The paler streaks on the veins reduced. Transverse bands very indistinct, sometimes completely reduced. Inner band in its lower part strongly oblique, visibly more so than in such species as *P. fascelinella* (HBN.) or *P. jucundella* (H.-S.), and similarly as in *P. epineura* (MEYR.). Small dark dots at the outer margin well developed. Cilia on the outer margin distinctly lustrous, with the basal streak of metallic lustrous scales, similar as in *P. epineura* (MEYR.). Hind wings with slight lustre, whitish or white, on the margins delicately darkened brownish. Cilia of hind wings snow-white.

Male genitalia [pl. XLIV, fig. 3—4] in their structure similar as in *P. fascelinella* (HBN.) and other related species. Uncus more slender than in *P. fascelinella* (HBN.). Pars basalis with more widened basal part than in *P. fascelinella* (HBN.). Valva rounded. Aedeagus as long as the whole copulatory apparatus or somewhat shorter. Cornuti: one large cornutus, but visibly smaller than in *P. fascelinella* (HBN.), and several small cornuti of various shapes, similar as in *P. persella* (TOLL.).

Female genitalia [pl. LX, fig. 2] similar as in *P. epineura* (MEYR.). Ductus bursae without loops, visibly widened at the beginning, on its whole length strongly sclerotized, with ribbed surface.

As I mentioned in part. VII of my Studies (1952) I described *P. soffneri* BLESZ. on the basis of the drawing of male genitalia which TOLL made from SOFFNER's specimen. It is not known where this specimen is at present. The allotype which is in TOLL's collection was collected in the same locality and at the same time as the male. Recently two other male specimens were discovered, one of which is in my collection while the other is in AMSEL's collection. It is not impossible that the female which I consider as an allotype of *P. soffneri* BLESZ. belongs to *P. epineura* (MEYR.) but it is difficult to solve this problem at present, having so little material to my disposition.

P. soffneri BLESZ. is a steppe element thus far known only from Eastern Europe.

Examined material:

USSR: 1 female (allotype): „Rossia mer. Gorlovka 24 VII 1943“, coll. TOLL. 1 male: „Orenburg“, author's coll. 1 male: Sarepta, Indorsk, 26 V, coll. AMSEL, Buchenberg.

***Pediasia subflavella* (DUPONCHEL, 1836)**

[Pl. XLIV, fig. 2, pl. LIX, fig. 4, pl. LXXXVIII, fig. 3—4]

Crambus subflavellus DUPONCHEL, 1836, Hist. Nat. Lép. France 10: 113, pl. 275, fig. 5.

Pediasia subflavella BŁESZYŃSKI, 1952, Pol. Pis. Ent. 22: 156, pl. 9, fig. 54, 55, pl. 2, fig. 12, pl. 4, fig. 19.

Antennae light brownish, in male deeply serrate, in female setaceous, before the terminal part very flatly serrate. Palps yellowish, in male somewhat darker than in female. Frons slightly convex, rounded. Frons, head, thorax, patagia, and tegulae in male yellow, in female whitish-yellowish. Length of the fore wing about 13 mm, width about 5 mm. Costal margin in male almost straight, in female visibly convex. Apex rather slightly pointed in both sexes. Outer margin delicately bent outwards, in female somewhat more oblique than in male. Ground of the fore wing in male orange-yellow, somewhat similar as in *Pediasia luteella* (DEN. & SCHIFF.); in female pale whitish-yellow. Two transverse bands very indistinct, a little darker than ground of wing. They are oblique, almost parallel to each other. Outer band forms a weakly developed tooth above the dorsal margin. Dark dots at the outer margin disappearing or completely absent. Cilia on the outer margin dull, unicolour, similarly coloured as ground of wing. Hind wings with slight lustre, in male brown with whitish cilia, in female whitish-brownish, visibly paler than in male, with white cilia.

Male genitalia [pl. XLIV, fig. 2] in general built similarly as in *P. fascelinella* (HBN.) and other related species. Uncus and gnathos visibly more slender than in those species. Uncus pointed, gnathos terminated by a small hook. Saccus wide. Pars basalis a little shorter and wider than in *P. fascelinella* (HBN.). Valva rounded. Aedeagus as long as the whole copulatory apparatus. It is relatively wider than in the related species. Several cornuti of various size.

In female genitalia [pl. LIX, fig. 4] lamella subgenitalis very narrow, gonapophyses anteriores and posteriores long, slender. Ductus bursae without loops, relatively short, strongly sclerotized on its whole length, with ribbed surface. It is strongly widened at ostium bursae. Bursa copulatrix small, transparent. No signum.

Pediasia subflavella (DUP.) is thus far known only from Corsica. It occurs in July and August.

Examined material:

Corsica: 1 male and 1 female: „Corsica“, author's coll. 3 males and 1 female: „Corsica 1867 Cst.“, coll. I. Z. P. A. S., Warszawa.

Pediasia pudibundella (HERRICH-SCHÄFFER, 1856)

[Pl. XLV, fig. 4, pl. LXXXIX, fig. 1]

Crambus pudibundellus HERRICH-SCHÄFFER, 1856, Syst. Bearb. Schmett. Eur. 6: 144.

Pediasia pudibundella BLESZYŃSKI, 1952, Pol. Pis. Ent. 22: 155, pl. 2, fig. 11, pl. 9, fig. 56.

Male: antennae brownish, unicolour, distinctly serrate. Palps brown outside, whitish inside and above. Frons and head white. Frons flat, rounded. Thorax and tegulae whitish. Length of fore wing varies from 12,5 to 13,5 mm, width from 4,5 to 5 mm. Costal margin almost straight, very delicately concave in the middle. Apex rounded. Outer margin a little bent outwards. Ground of fore wing distinctly lustrous, light brownish. The veins are distinctly whitish. Transverse bands sharply delineated, yellow, slightly contrasting with ground of wing. Shape of these bands similar to those of *P. fascelinella* (HBN.). No dark dots on outer margin. Cilia on outer margin lustrous, brown, several times sharply interrupted by white. Hind wings with slight lustre, light brownish, darkly edged. Cilia of hind wing snow-white.

Male genitalia [pl. XLV, fig. 4]: uncus and gnathos slender, long. Uncus pointed, gnathos terminated by a small prong. Tegumen slender, narrow. Pars basalis long, distinctly curved, at the end bent hook-like. Valva narrow, rounded. Aedeagus very strongly curved. Its apical part is distinctly wider than

the distal one. Cornutus very long. Its length equals $1/3$ of the whole length of aedeagus.

Unfortunately I do not know the female of this species.

P. pudibundella (H.-S.) is a Pontic element from Europe reported only from East European steppes.

Examined material:

5 males spec. from Sarepta, coll. Zoological Museum of the Humboldt University in Berlin, Museum of the Natural History in Vienna, I. Z. P. A. S., Warszawa, and author's coll.

Pediasia hübnéri BŁESZYŃSKI, 1952

[Pl. XLV, fig. 3, pl. LX, fig. 3, pl. LXXXVIII, fig. 7—8]

Pediasia hübnéri BŁESZYŃSKI, 1952, Pol. Pis. Ent. 22: 154, pl. 2, fig. 10, pl. 4, fig. 21, pl. 8, fig. 48, 49.

Antennae unicolour, brown, in male pectinate from below, almost delusively similar as in *P. epineura* (MEYR.), in female very flatly serrate, almost setaceous. Palps brown outside, distinctly paler inside. Frons slightly convex, rounded, brownish. Head light brownish. Patagia, thorax and tegulae brown. Length of the fore wing in male 11 mm, that in female 10 mm, width 4 mm. Costal margin in male almost straight, very delicately concave in the middle, that in female visibly convex. Apex in male rounded, in female rather pointed. Outer margin bent outwards, slightly oblique in both sexes. Ground of the fore wing brown. The pale streaks running along the veins, characteristic for many species of the genus *Pediasia* HBN., disappearing. Outer band brown, indistinct, delicately bordered with white from outside. The angle above the dorsal margin very slight. Inner band also indistinct, blurred, brown, oblique. The black dots at the outer margin present. Cilia on the outer margin lustrous, several times indistinctly interrupted by white. Basal streak of scales with rather metallic lustre. Hind wings with distinct lustre, white-creamy, in male edges darkened with brown. Cilia of hind wings white.

Male genitalia [pl. XLV, fig. 3] somewhat similar as in *P. pudibundella* (H.-S.). Uncus and gnathos of equal length. Uncus sharply pointed. Gnathos terminated by a small hook. Tegumen narrow, slender. Pars basalis long, visibly curved,

pointed. It is not curved hook-like at the end as in *P. pudibundella* (H.-S.). Valva narrow, similar as in *P. pudibundella* (H.-S.). Aedeagus less curved than in the previous species. Its length corresponds to that of the whole copulatory apparatus. Cornutus visibly shorter than in *P. pudibundella* (H.-S.). Its length corresponds to only about 1/4 of that of the aedeagus. Except a large cornutus in aedeagus there are also several additional cornuti. I had not observed them before, and this characteristic was not given in my description of *P. hübneri* BLESZ.

Female genitalia [pl. LX, fig. 3]: lamella subgenitalis distinctly wider than in the related species. Gonapophyses anteriores and posteriores long. Ductus bursae without loop, only with one semi-loop. It is narrow, strongly sclerotized to half of its length and with ribbed surface, then transparent, and before bursa copulatrix again much more sclerotized. Bursa copulatrix oval, transparent. No signum.

This species is known only from Sarepta.

Examined material:

Holotype (male): „Rossia mer.“, author's coll., allotype (female): „Rossia m. Sarepta, 1866, CHR[ISTOPH]“, coll. I. Z. P. A. S., Warszawa.

***Pediasia uhryki* (ROTSCHILD, 1911)**

Crambus uhryki ROTSCHILD, 1911, Entomologist **44**: 50, fig.

Pediasia uhryki BLESZYŃSKI, 1952, Pol. Pis. Ent. **22**: 157, pl. 1, fig. 1.

One male specimen from Hungary (Drava Sarvas) was described as *Crambus uhryki* ROTSCH. According to the photograph of the type given by the author of this species one can state that it is similar externally to *Pediasia contaminella* (HBN.). But from the fragmentary drawing of the male genitalia (only valva), it should be rather placed in the group *P. fascelinella* (HBN.). As I did not investigate the type I give here the original description: „Similar to *C. contaminellus* HÜBN. Fore wing shorter, the apex more rounded, the outer margin not being incurved or straight below the apex, as is the case in *C. contaminellus*; upper surface without white scales, the black dusting as in the species mentioned but no black

dots at margin; fringe darker, whereas in *C. contaminellus* the long as well as the short scales of the fringe have white tops; the long scales in the new species have a dark apex, median line not marked, distal line very indistinct, in the same position as in *C. contaminellus* but not at all angulated. Hind wing broader, fuscous, lighter below the cell, apex more rounded than in *C. contaminellus*; the fringe more uniform in colour, not showing such a prominent dark line as in the allied species. Genitalia: both the dorsal and ventral process of the anal segment a little broader than in *C. contaminellus*, the dorsal one nearly straight in a lateral view, only the extreme tip being curved downwards; the ventral process broader than the dorsal one in a view from above. Clasper composed, as in the allied species, of two pieces, both of about the same length, the ventral piece broad and but feebly chitinized with the apex rounded. This piece is of practically the same width throughout, being about twice as broad as it is in *C. contaminellus*. Its inside is densely covered with erect narrow scales, recalling a cloth brush. The second piece of the clasper consists of a long rod-like, strongly chitinized process, which originates dorsally at the base of the first piece. This rod bears a dense fringe of hair, which in *C. contaminellus* are less numerous. Moreover, the rod is less curved and less hollowed out along the inner surface than in that species. On male: Drava Sarvas, Szerem Co., Hungary, VII 1909, coll. G. UHRÝK (Type in the Tring Museum)".

GROUP 2

Group type: *Pediasia truncatella* (ZETT.)

Only one European species belongs here viz. *P. truncatella* (ZETT.). The veins on the fore wing are not visible as pale streaks. Fore wings coloured more vividly than in the species of the previous group. In male genitalia several cornuti in the aedeagus. There is a secondary process at the base of pars basalis. In the female genitalia ductus bursae weakly sclerotized.

***Pediasia truncatella* (ZETTERSTEDT, 1840)**

[Pl. XLVII, fig. 1, pl. LX, fig. 6, pl. XC, fig. 5]

Chilo truncatellus ZETTERSTEDT, 1840, Insecta Lapponica: 995.

Crambus Lienigiellus ZELLER, 1834, Stett. ent. Zeit.: 142.

Crambus truncatellus ZELLER, 1863, Chil. Cramb. Gen. Spec.: 28.

Antennae brown, sometimes ringed white, in male visibly serrate, in female setaceous. Palps brown, very finely spotted paler. Frons flat, rounded, brownish. Head, patagia, thorax, and tegulae brown. Length of the fore wing varies from 11,5 to 13 mm, width from 4,2 to 5 mm. Costal margin almost straight, or delicately convex. Apex rounded. Outer margin straight, not oblique. Ground of the fore wing brownish in the upper part yellowish in places, suffused with whitish scales above the dorsal margin. Outer band below the costal margin arched toward the outer margin, wavy, below with a tooth pointed toward wing base. Inner band brown, wide, oblique, with indistinct edges. Transverse bands sometimes very indistinct, or disappearing. The small dark dots at the outer margin more or less well developed. Cilia on the outer margin almost dull, brownish. Hind wings light grey to dark brown, dull. Cilia of the hind wings always pale whitish.

Male genitalia [pl. XLVII, fig. 1] in general build similar as in *P. fascelinella* (HBN.). Pars basalis angled at the base, then straight, while in *P. fascelinella* (HBN.) it is visibly curved. It has a secondary, distinct sharply pointed process at its base, which is absent in the species of the *P. fascelinella* (HBN.) — group. Valva rounded. Aedeagus a little longer than the whole copulatory apparatus. Several very small cornuti and one large cornutus typical for many species of the genus *Pediasia* HBN.

Female genitalia [pl. LX, fig. 6]: gonapophyses anteriores and posteriores long, narrow. Lamella subgenitalis narrow. Ductus bursae very transparent, visibly widened at the beginning, then strongly narrowed, then again strongly widened and visibly narrowed before bursa copulatrix. Bursa copulatrix transparent. No signum.

P. truncatella (ZETT.) is a Boreal species. It occurs in the

moors in Scandinavia. It is also reported from Livonia and from Czechoslovakia.

Examined material:

1 male and 1 female: 1887 Livonia S., coll. I. Z. P. A. S., Warszawa.
1 female from Finland: Tb Pyhähäkki, leg. W. HACKMANN, author's coll.

GROUP 3

Group type: *Pediasia contaminella* (HBN.)

In male genitalia valva strongly narrowed. One relatively small cornutus in the aedeagus. On the fore wings cilia not interrupted by white streaks. Here belong 4 species: *P. contaminella* (HBN.), *P. escalerella* (SCHMIDT), *P. hispanica* BLESZ., and *P. squalidalis* HBN.

Pediasia contaminella (HÜBNER, 1796)

[Pl. XLIV, fig. 5, pl. LIX, fig. 3, pl. LXXXIX, fig. 3—4]

Tinea contaminella HÜBNER, 1796, Samml. Eur. Schmett.: 24 pl. 9, fig. 59.

? *Tinea arbustella* SCHRANK, 1802, Fauna Boica 2: 100.

Chilo Contaminellus GERMAR & ZINCKEN, 1817, Magazin Entomol. 2: 107.

Pediasia Contaminalis HÜBNER, 1825, Verz. Bek. Schmett.: 365.

Crambus Contaminellus STANTON, 1849, Syst. Catal.: 1.

Crambus cantiellus TUTT, 1886, Entomologist 19: 52, fig.

Antennae light brown, unicolour. In male antennae distinctly serrate, in female setaceous. Palps brown with fine paler spotting outside, usually lighter inside. Frons rather flat, smooth, brown. Patagia, thorax and tegulae unicolour, lighter or darker brown. Length of the fore wing varies from 10,5 to 12 mm, width from 3,3 to 4,2 mm. Costal margin straight, apex slightly rounded, more pointed in female than in the male. Outer margin below apex very delicately bent in, further on straight, more oblique in female. Fore wing dull, of very variable coloration. In typical specimens it is rather light brown. There are also speci-

mens with pale brown-grey fore wings. On the other hand there are darkened forms of intermediate colorations, from brown to black-brown, which are characteristic by the complete reduction of design. COSTANTINI (1922) described such specimens under the name *sticheli*. In typical specimens and in the lighter coloured ones there occur two sharp transverse bands which have the shape of dark lines. Inner band sharply angled below the costal margin, further on it runs very obliquely towards wing base. In the middle of the wing it is delicately angled. This angle has the shape of a dark tooth. By this feature *P. contaminella* (HBN.) differs from *P. squalidalis* HBN. in which there is no such tooth. Outer band oblique, above the dorsum distinctly angled tooth-like. Several dark dots at the outer margin. Cilia on the outer margin dull uniformly brown, quite at the base delicately paler. Hind wing grey-brownish, at the base slightly paler, usually lighter than the fore wing. Cilia creamy to brownish, streak of basal scales generally darker than the rest.

Male genitalia [pl. XLIV, fig. 5]: uncus slender, sharp, curved hook-like. Gnathos also narrow, pointed, curved. Tegumen very wide. Saccus wide. Pars basalis very well developed as a straight dagger, somewhat shorter than valva, with distinct widening at its base. Aedeagus distinctly shorter than the whole copulatory apparatus, strongly curved, narrow. A detached brush-like process at the end. Cornutus single, small.

In female genitalia [pl. LIX, fig. 3] gonapophyses anteriores and posteriores narrow, long. The connection of ostium bursae with lamella subgenitalis very weak. Ostium bursae weakly sclerotized, not distinguished from the rest of ductus bursae. Ductus bursae very weakly sclerotized on the whole of its length. No signum.

Sure locations of this species are known from Central, South and West Europe (from Pyrenees to Mińsk). It is a xerophilous species appearing from June to September.

Examined material:

France: 2 males: „St. Pierre d'Irube B. P., 16 VIII [and] 2 IX 1935, G. T. ADKIN“, author's coll. 1 female: „Mougerre B. P. 16 VI 1938, G. T. ADKIN“, author's coll.

Italy: 3 males „Emilia Casinalbo, 12 IX 1931, A. FIORI“, author's

coll. 1 male and 1 female: „Emilia Bologna, 21 IX 1928, A. FIORI“, author's coll.

Hungary: 1 male: „Cserbet p. Pécs, 12—20 VI 1936, J. KLIMESCH“, author's coll.

Poland: 2 females from Kretowiny, distr. Morąg, 15—25 VII 1953, author's coll. 5 males from Bogucice, distr. Pińczów, 13 VII 1952, author's coll. 1 male from Przegonia, distr. Kraków, VI 1952, author's coll.

Pediasia escalerella (SCHMIDT, 1933)

Crambus escalerellus SCHMIDT, 1933, Bol. Soc. Esp. Hist. Nat. Madrid 33: 397, pl. 37, fig. 1.

Unfortunately I do not know the types of this species one of which is in Museo Nacional de Ciencias Naturales in Madrid and the other in Hungarian National Museum in Budapest. This is a species most related to *P. contaminella* (HBN.) and *P. hispanica* BLESZ. as is evident from the drawing of male genitalia given by SCHMIDT (1933). I cite the original description of this species: „Grösse: ♂ Vdfl. L. 10,5 mm; Exp. 20,5 mm, ♀ Vdfl. L. 12,5 mm; Exp. 26 mm. Gehört in die *contaminellus*-Gruppe. Einem hellen *contaminellus* ähnlich. Grundfarbe eintönig lichtockergrau, besonders bei den Rändern etwas dunkler, fein bräunlich überstäubt. In der Flügelmitte durch einen Längsstreifen schwach licht aufgehellt, was bei *contaminellus* nie vorkommt. Die Vorderfl.-Oberfläche ist rauhschuppig mit grösseren, unregelmässig zerstreuten, spärlichen, schwarzbraunen Schuppen. Von den bei *contaminellus* stets vorhandenen 2 Querstreifen, ist hier nur der äussere schwach angedeutet und in seinem Verlaufe dem von *contaminellus* ähnlich, nur in seiner unteren Hälfte gleichmässiger gezackt, ohne den scharfen Vorsprung in der Falte. Im Saume stehen an den Rippen-Enden, vom Innen-Rand bis zur Mitte des Aussen-Randes, 3 schwarze Punkte, wie bei *salinellus* subsp. *nepos* ROTSCH., bei welcher Art auch der lichtere Längsstrich in der Flügelmitte vorhanden ist. Fransen dunkel schwarzgrau, an der Spitze weissgrau, mit einer eben solchen hellen Teilungslinie. Hinterflügel lichter als bei *contaminellus*, weiss-grau, saumwärts schwärzlich verdunkelt. Die helleren Fransen grau-weiss, mit einer dunkleren Teil-

lungslinie. Kopf, Fühler, Nebenpalpen und Abdomen von der Grundfarbe, die langen Palpen sind aber dunkler, schwarzbraun gesprenkelt. Da die Art auch von einigen Fachkollegen für eine Form von *contaminellus* gehalten wurde, habe ich vergleichsweise auch die ♂ — chen Genitalien beider Arten mikroskopisch untersucht. Aus den hier angeführten pünktlichen microscopischen Zeichnung-Abbildungen des Genitalapparates (Fig. 1), sind die Unterschiedsmerkmale gut sichtbar. Der grösste und wesentliche Unterschied ist aber im Penis, welcher am analen Ende bei der neuen Art (Fig. 1-C), in einem klauenförmigen Haken endigt und im allgemeinen nicht so gebogen ist, als bei *contaminellus* (Fig. 1-D), wo diese Biegung bogenförmig und am Ende verbreitet einem menschlichen Fuss ähnlich ist. Diese sehr charakteristischen Unterschiede liefern somit schlangende Beweise bezüglich der Artunterschiede“.

From Sierra de Gredos (10—16 VI 1927), Spain“.

Pediasia hispanica BLESZYŃSKI, 1956

[Pl. XLIII, fig. 6, pl. LXXXIX, fig. 2]

Pediasia hispanica BLESZYŃSKI, 1956, Ann. Hist.-Nat. Mus. Nat.

Hung. 7: 421, fig. 5.

Male: antennae brown, unicolour, distinctly serrated. Palps brown, finely spotted whitish outside, inside whitish. Frons flat, rather rounded, dirty yellowish. Thorax pale brownish. Fore wings dull, dark brown. The design strongly reduced. Length of the fore wing 12 mm. Costal margin almost straight. Apex distinctly pointed. Outer margin straight distinctly oblique. No dark dots at the outer margin. Cilia on the outer margin dull, unicolour, grey-brown. Hind wings with slight lustre, whitish, brownish at the margins. Cilia whitish.

Externally *P. hispanica* BLESZ. is similar to dark specimens of *P. contaminella* (HBN.).

Male genitalia [pl. XLIII, fig. 6]: uncus similar as in *P. contaminella* (HBN.). Gnathos short, narrow, pointed. Tegumen a little narrower than in *P. contaminella* (HBN.). Valva broader than in *P. contaminella* (HBN.), rather similar as in *P. escalerella* (SCHMIDT). Pars basalis strong, in the shape of a long hook rounded at the end. Pars basalis visibly

shorter than valva, at the base broad, with additional process. Saccus more elongated than in *P. contaminella* (HBN.). Aedeagus a little longer than the whole copulatory apparatus, at the end without the bristle as in *P. contaminella* (HBN.), or a hook as in *P. escalerella* (SCHMIDT.). At the end of aedeagus numerous cornuti of the various length.

Holotype (male): „Gredos, VIII 1907, ARIAS“, coll. Hungarian National Museum in Budapest.

***Pediasia squalidalis* HÜBNER, 1825**

[Pl. XLV, fig. 1—2, pl. LX, fig. 4, pl. LXXXIX, fig. 5—7]

Tinea inquatella HÜBNER, 1814—1817, (nec DENIS & SCHIFFER-MÜLLER), Samml. Eur. Schmett.: pl. 66, fig. 442 ♀.

Pediasia Squalidalis HÜBNER, 1825, Verz. Bek. Schmett.: 365.

Crambus Contaminellus DUPONCHEL, 1836, (nec HÜBNER), Hist. Nat. Lép. France 10: 273, pl. 283, fig. 4.

Crambus salinellus TUTT, 1887, Entomologist 20: 56.

Pediasia salinella BLESZYŃSKI, 1953, Annal. Mus. Zool. Pol. 15: 103.

Antennae light-brown above, darker underneath, in male serrate, in the female setaceous. Palps brown outside, distinctly paler inside. Frons brownish, slightly convex, delicately rounded. Head light brown. Patagia, thorax, and tegulae light brown. Length of the fore wing varies from 10,5 to 12,5 mm, width from 3,5 to 4,2 mm. Costal margin more or less straight, sometimes very delicately convex in the middle. Apex rather pointed. Outer margin usually slightly bent inwards underneath apex. Sexual dimorphism in shape of the wings not distinct. Ground of the fore wing light brown. At the base of the wing usually a rather well visible dark brown streak reaching almost to half the wing length and touching the inner band. Inner band forms an indistinct stripe. It is arched toward the outer margin below the costal margin, still lower very strongly oblique toward base of wing. In *P. contaminella* (HBN.), rather similar in coloration and design of the wings, inner band distinctly less oblique, narrower and sharp. Besides in *P. contaminella* (HBN.) the dark streak at base of wing is absent. Ground of the wing above the dark streak generally paler. This paling reaches to the inner band. Inner band has no angle

in the shape of a little tooth in middle of wing width which appears in *P. contaminella* (HBN.). Outer band in the upper part of wing arched toward the outer margin; lower, above the dorsal margin forming a tooth-like angle pointed towards base of wing. This break is a little weaker and more delicate than in *P. contaminella* (HBN.). Several dark dots at the outer margin, in lower part of wing. Cilia on the outer margin almost dull with slight lustre, uniformly coloured, light brown. In *P. contaminella* (HBN.) the cilia on the outer margin are quite dull. Hind wing with delicate lustre light greyish, much lighter than ground of the fore wing. The margins are sometimes marked darkly. Cilia of hind wings somewhat lighter than their ground, coloured uniformly light greyish.

subsp. *nepos* (ROTSCH., 1911), [pl. LXXXIX, fig. 7].

Crambus salinellus subsp. *nepos* ROTSCHILD, 1911, Entomologist 44: 50, pl. 1, fig. 3, 3a, 7.

The specimens of this subspecies are characteristic by the reduction of the design on fore wings as I stated on the basis of 4 cotypes received in exchange from the Hungarian National Museum in Budapest. The dark streak at the base of the wing completely or almost completely disappearing. Both transverse bands, the outer and inner one, very slightly visible or completely reduced. The specimens belonging to the subsp. *nepos* (ROTSCH.) are somewhat lighter coloured than those of the typical form. I found no differences in the genitalia of this subspecies and the typical form. *Pediasia squalidalis* HBN. subsp. *nepos* (ROTSCH.) was described from the Hungarian Pusztá. Two specimens identical with the cotypes of subsp. *nepos* (ROTSCH.) were collected in 1952 and 1953 at Krzyżanowice near Chroberz (Central Poland). It is a very interesting fact that a specimen of the typical form was collected in the same place.

subsp. *caradjaella* (REBEL, 1907).

Crambus caradjaellus REBEL, 1907, Dtsch. ent. Zeit. Iris 19: 228.

This form was described by REBEL as a distinct species. To elucidate this problem I borrowed the type from the Museum of Natural History in Vienna. It is a male from Sulina (Rouma-

nia). After preparation of the genitalia I stated that they are so similar to those of *P. squalidalis* HBN. that the form *caradjaella* (REBEL) probably does not deserve to be separated as a distinct species. Externally subsp. *caradjaella* (REBEL) is similar to the subsp. *nepos* (ROTSCH.). It is somewhat more grey than brown. The design of the fore wings is reduced similarly as in subsp. *nepos* (ROTSCH.). In the male genitalia aedeagus is larger and more bent than in the typical form. Cornutus larger than in the typical form. The investigation of a more extensive material of this interesting form, and especially of females, would solve definitely whether we have to do with a species or only with a subspecies of *P. squalidalis* HBN.

subsp. *ludovicella* (MARION, 1952).

Crambus salinellus subsp. *ludovicellus* MARION, 1952, Mitt. Münch. Ent. Ges. 42: 154, fig. 3.

According to MARION's description, the specimens of this form are grey-pearly and not brown; that means they resemble by the coloration subsp. *caradjaella* (REBEL). In the male genitalia pars basalis is more bent than in the typical form. The types are from Bavaria (Kochel, Isartal and Ascholding). The author does not give the description of the female genitalia. The aedeagus of subsp. *ludovicella* (MARION) was also omitted from the drawing.

In male [pl. XLV, fig. 1—2] as well as in female genitalia [pl. LX, fig. 4] of *P. squalidalis* HBN. and *P. contaminella* (HBN.) we find much greater differences than in their coloration and design of the fore wings. Uncus and gnathos of similar length. Uncus less slender than in *P. contaminella* (HBN.) pointed and narrowed at its end. Gnathos also somewhat narrower than in *P. contaminella* (HBN.), narrow and dagger-like at its end. Tegumen more elongated, longer and narrower than in *P. contaminella* (HBN.). Pars basalis well developed, in the shape of a very long, narrow, strongly sclerotized hook. It is strongly widened at the base, distinctly bordered from valva. It resembles rather pars basalis of *Pediasia fascelinella* (HBN.), for it is distinctly bent and long (it reaches to the end of valva), while in *P. contaminella* (HBN.) pars basalis is dagger-

-like, straight and terminated distinctly before the end of valva. Slightly sclerotized part of valva very narrow. Aedeagus narrow, visibly shorter than the whole copulatory apparatus, slightly bent. One cornutus visibly shorter than in *P. fascelinella* (HBN.), moreover, numerous minute thorns near the end of vesica. These thorns vary in number and size. Aedeagus has no apical brush occurring in *P. contaminella* (HBN.). A series of preparations of the species in question has shown a marked variability of its male genitalia.

Female genitalia [pl. LX, fig. 4]: ostium bursae with list-like thickening. Ductus bursae without loops. It is rather strongly sclerotized to the half of its length, than transparent. Bursa copulatrix transparent. No signum.

As a matter of fact *P. salinella* (TUTT) is a synonym of an old name *Pediasia squalidalis* HÜBNER, 1825. HÜBNER's name was forgotten and it is not met with anywhere in the literature. The figure number 442 in HÜBNER's Sammlung Europäischer Schmetterlinge shows the female of *P. salinella* (TUTT), however, the description of this drawing states that it is „*Tinea inquinatella*“. Many later authors cite in the synonymy of the species in question: „*Tinea inquinatella* HBN. ♀“. Later, however, HÜBNER (1825) stated that he described a species different from *Agriphila inquinatella* (DEN. & SCHIFF.) and gave a name for this species. In 1825 HÜBNER gives on page 365 of his Verzeichniss bekannter Schmettlinge [sic!]: „*P[ediasia] Squalidalis. inquinatella* HÜBN. Tin. 442“. Therefore for the species represented in Samml. Eur. Schmetterlinge on fig. 442 HÜBNER gave the name *Pediasia squalidalis*. A similar case took place in the species *Catoptria specularis* HBN. This species was, similarly as *Pediasia squalidalis* HBN., drawn in Sammlung Europäischer Schmetterlinge and described as *Tinea pinetella* and again HÜBNER in his Verzeichniss on the same page as *P. squalidalis* HBN. gives: „*C. Specularis. Tinea pinetella*...“.

P. squalidalis HBN. is a halobiontic species confined to saline regions. It occurs along the shores of France, Germany, Holland, Great Britain, it is known also from the shores of Sweden. Besides the shores the species in question appears also in midland saline regions. It occurs from June to September.

Examined material:

France: 2 males: „Vannes Aout“, author's coll.

Germany: 1 male: „Ost-Fries. Inseln Wangerooge, Licht, 19 VI 1943, E. JÄCKH“, author's coll. 1 male „Wangerooge am Deich Aussenseite, Licht, 21 VI 1947, E. JÄCKH“, author's coll. 1 male „Wangerooge Graue Dünen, Licht, 22 VII 1947, E. JÄCKH“, author's coll.

Hungary: [subsp. *nepos* (ROTSCH.)] 1 male spec.: „Kun. Szt. Miklós, SCHMIDT, 1911 IX 23“, author's coll. 2 female spec.: „Mezőberény SCHMIDT, 1910 VIII“, author's coll. 1 male spec.: „Izsák, SCHMIDT, 1912 VIII 12“, author's coll.

Roumania: [subsp. *caradjaella* (REB.)]: 1 male spec.: „F. SALAY, Sulina, 5 IX 1924“ (type), coll. Museum of the Natural History in Vienna.

Poland: 3 male spec. from Krzyżanowice, distr. Pińczów, VII—VIII, 1952—1953, coll. I. Z. P. A. S., Warszawa. 1 male: „Czorsztyn, 20 VI 1955, leg. ŻUKOWSKI“, author's coll.

***Pediasia monotona* (FILIPJEV, 1927)**

[Pl. LX, fig. 5, pl. LXXXIX, fig. 8]

Crambus monotonus FILIPJEV, 1927, Jahrb. Martj. Staatsmus. Minussinsk 5: 11.

Crambus salinellus subsp. *monotonus* SOWINSKI, 1935, Zbirknik Prac Zool. Muz. 15: 64.

Female: antennae unicolour, brown, setaceous. Palps brown, very finely spotted paler. Frons rather flat, light brownish. Head, thorax, patagia and tegulae light brownish. Length of the fore wing 16 mm, width 4,5 mm. Costal margin almost straight, apex pointed, outer margin below apex visibly bent inwards. Ground of the fore wing light brown. Transverse bands very indistinct, yellow, visible only in middle of wing. Three small black dots at the outer margin. Cilia on the outer margin dull, similarly coloured as ground of wing. An indistinct dark streak at wing base. Hind wings greyish with whitish cilia.

Female genitalia [Pl. LX, fig. 5]: gonapophyses anteriores and posteriores similar as in previous species. Ductus bursae visibly wider than in *P. squalidalis* HBN. It is somewhat more sclerotized than in that species. Bursa copulatrix transparent. No signum.

It is difficult to decide whether this is a distinct species or only a subspecies of *P. squalidalis* HBN. SOWINSKI (1935)

in his work about *Pyralidae* of the Kiev district writes that ŻYCHARJEW considers the second case. According to that author *P. monotona* (FIL.) is distributed from Witma and Bajkal to Kamieniec Podolski and from Orel in the north to Taganrog in the south.

Examined material:

One female spec. from Russia oc.-mer., author's coll.

GROUP 4

Group type: *Pediasia steppicolella* (ZERNY)

I place only one species into this group: *P. steppicolella* (ZERNY). Externally characterised by the absence of an inner band on the fore wing. In male genitalia gnathos with round end without hook which is exceptional in species of the genus *Pediasia* HBN. Pars basalis with additional process. Aedeagus with single cornutus.

Pediasia steppicolella (ZERNY, 1914)

[Pl. XLIV, fig. 1, pl. XC, fig. 8]

Crambus steppicolellus ZERNY, 1914, Ann. Nathist. Hofmus. 28: 300.

Male: Antennae brown-grey on upper side; brown, distinctly serrate underneath. Palps brown with fine pale spots outside, pale inside. Head and thorax dirty whitish. Frons very slightly convex, smooth. Patagia dirty whitish. Tegulae brownish. Length of fore wing 8,5 mm, width 3,5 mm. Ground of fore wing light-brownish with slight lustre. Costal margin nearly straight, apex slightly pointed, termen nearly straight, distinctly oblique. Median vein distinctly paler. Traces of an outer band, which has no distinct tooth-like angle near dorsal margin, a feature very characteristic for many species of the genus *Pediasia* HBN. No inner band. Termen very delicately bordered with brown. A dark dot near the outer margin below half the wing's width. Cilia on the outer margin slightly lu-

strous, with a very narrow pale line quite at the base, then with a dark line of base scales, further with a pale and a dark line. Hind wings slightly lustrous, whitish, with pure white cilia.

Male genitalia [pl. XLIV, fig. 1]: uncus about as long as gnathos, with a delicate hook at the end. Gnathos rounded at the end, without hook. Valva very narrow, distinctly broadened at the end. Pars basalis sabre-like, distinctly bent, rather rounded than pointed at the end. Pars basalis strongly broadened at the base, with an additional, distinct, strongly pointed process. Aedeagus distinctly shorter than the whole copulatory apparatus, straight, narrow, with one small cornutus.

A species described by ZERNY (1914) on the base of four males caught in Orenburg (South-Eastern Europe). According to ZERNY the specimens were caught between July 9th and 15th, 1892, and were in HANSEN'S collection. ZERNY compared this species with *Agriphila poliella* (TREITSCH.), however, the latter differs distinctly from *P. steppicolella* (ZERNY). *P. steppicolella* (ZERNY) has no central dot on the fore wing which is very distinct in *A. poliella* (TREITSCH.), moreover the latter has cilia on the outer margin of the fore wing with a strong metallic lustre, which is not the case with *P. steppicolella* (ZERNY). Except the mentioned differences both species differ distinctly in wing outline. In *A. poliella* (TREITSCH.) the fore wing is distinctly more elongated, and apex of fore wing is rounded, while in *P. steppicolella* (ZERNY) it is pointed.

Examined material:

1 male „10 VI [18]92“, „15 XI“, „58“, „Orenbg. [Orenburg] mer. Tenger Oberst“, „*Crambus steppicolellus* ZERNY Type ♂“, coll. Museum of the Natural History in Vienna.

Section B

As I mentioned above the species of section B differ considerably and may deserve to be considered as a distinct genus. Nevertheless, I do not attempt to solve this problem here. The investigation of nearctic material in which the species of the genus *Pediasia* HBN. appear abundantly will probably elucidate it. The Nearctic species of the genus *Pediasia* HBN. show a much greater differentiation between species as well

as groups, and therefore it is possible that in a greater scale the considerable differences between the European species of the section B will diminish. In such case the separation of section B into a distinct genus would not be necessary.

The species of section B show strong external similarity to the species of section A. Their coloration is unicolour, grey-brown. Two transverse bands somewhat darker than the ground. The sexual dimorphism similarly as in the species of section A, evident in the shape of the wings, which are narrower, more pointed and with more oblique outer margin in females than in males. In genitalia the species of section B differ considerably from those of section A. In males pars basalis is generally separated from valva near its end. In this place a strongly sclerotized process. In aedeagus vesica terminated with prong. This feature never appears in the species of the previous section. The females of section B show much greater genital seclusion. Their lamella subgenitalis is strongly accreted to ostium bursae which is not the case in females of the previous section. Lamella subgenitalis sometimes without gonapophyses anteriores which always appear in the species of section A.

The geographical distribution of the species of section B differs from that of the species of section A. While the latter are distributed generally in the East European region, the species of section B occur in the Mediterranean basin. Only one of them, *P. matricella* (TREITSCH.), is a Pontic element.

GROUP 1

Group type: *Pediasia matricella* (TREITSCH.)

Three European species belongs here viz. *P. matricella* (TREITSCH.), *P. bolivarella* (SCHMIDT), and *P. desertella* (LED.). In male genitalia pars basalis with a secondary process at its end.

Pediasia matricella (TREITSCHKE, 1832)

[Pl. XLVI, fig. 4, pl. LXI, fig. 2, pl. XC, fig. 1—2]

Phycis matricella TREITSCHKE, 1832, Schmett. Eur. 9: 71.

Crambus matricellus ZELLER, 1839, Isis: 174.

Antennae brown, unicolour, in male distinctly serrate, in female setaceous. Palps brown, indistinctly finely spotted pale. Frons flat, rounded. Frons and head yellowish to brown. Thorax, patagia, and tegulae brownish. Length of the fore wing varies from 8,6 to 11,4 mm, width from 2 to 3 mm. Fore wing very slender. Costal margin straight from wing base to $\frac{2}{3}$ of its length, then delicately angled. Apex pointed in male as well as in female. Outer margin strongly oblique. Fore wing in male narrower, more slender than in female. Ground of the fore wing from grey-brown to yellowish-brown. Transverse bands indistinct brown. Outer band below the costal margin angled, then oblique; above the dorsal margin a small tooth pointed toward wing base. Outer band rather widely bordered with paler colour from outside. Inner band strongly oblique. In the middle of wing, outside and inside of inner band two indistinct small pale spots. Third pale spot lies in the median cell. Sometimes the whole wing is grey-brown, and the design is reduced. The small dark dots at the outer margin generally well developed. Cilia on the outer margin dull, similarly coloured as ground of wing. Hind wing with slight lustre, grey-whitish or white, with similarly coloured cilia.

Male genitalia [pl. XLVI, fig. 4]: uncus dagger-like, a little shorter than gnathos. Gnathos widened at the end, sharply pointed. Tegumen wide. Saccus relatively large, pars basalis developed in the shape of a long sheet, wide at the base of valva, then strongly narrowed, visibly bifurcated at the end. Only the terminal bifurcation is separated from valva. Pars basalis is visibly bordered from valva. No second lateral process on valva. Aedeagus a little shorter than the whole copulatory apparatus, very delicately bent, narrow, terminated with a long prong. A single cornutus, as long as the terminal prong.

Female genitalia [pl. LXI, fig. 2] very small. Gonapophyses anteriores reduced. Ductus bursae straight, short, strongly sclerotized with ribbed surface. Bursa copulatrix small, transparent. No signum.

This species is a Pontic element, reported in Europe from Hungary, Roumania and Russia. It appears in August and September.

Examined material:

Hungary: 14 males and females: „Kun. Szt. Miklós, SCHMIDT, 1912 VIII“, author's coll. 7 males: „Budafok, UHRİK, 1911 VIII“, author's coll. USSR. 6 males from Sarepta, coll. I. Z. P. A. S., Warszawa.

***Pediasia bolivarella* (SCHMIDT, 1930)**

[Pl. XLVI, fig. 3, pl. LXI, fig. 5, pl. XC, fig. 3—4]

Crambus bolivarellus SCHMIDT, 1930, Int. ent. Zeit. 24: 310, figs.

Antennae in shape and colouring similar to those of the previous species. Palps brown. Frons brown, flat, rounded. Head light brown. Thorax, tegulae, and patagia brown. Length of the fore wing 10—11 mm, width in male 3 mm, in female 2 mm. Costal margin delicately convex. Apex less pointed than in the previous species, rather rounded in male as well as in female. Outer margin delicately bent outwards, slightly oblique. Ground of the fore wing brown. Transverse bands indistinct, of similar shape as in *P. matricella* (TREITSCH.). In the median cell a small black dot which is not bordered paler as in previous species. Cilia on the outer margin almost dull, brown, unicolour. Hind wings with slight lustre, grey, with similarly coloured cilia. Female, similarly as in previous species, more sharply and vividly coloured.

This species is nearly related to the previous one, but easily distinguishable from it, by its more rounded apex of the fore wing and visibly darker hind wings, which are white or white-creamy in *P. matricella* (TREITSCH.) and grey to grey-brown in *P. bolivarella* (SCHMIDT).

Male genitalia [pl. XLVI, fig. 3]: uncus wider than in the previous species, terminated by distinct prong which is absent in *P. matricella* (TREITSCH.). Saccus more elongated than in *P. matricella* (TREITSCH.). Pars basalis somewhat shorter, less bifurcated than in *P. matricella* (TREITSCH.). Aedeagus almost as long as the whole copulatory apparatus, very delicately curved, visibly wider than that of the previous species. The terminal prong of vesica visibly shorter than in *P. matricella* (TREITSCH.). Three cornuti of various size. Two of them are large, and the third one is very small.

Female genitalia [pl. LXI, fig. 5]: a little larger than in *P. matricella* (TREITSCH.). Gonapophyses anteriores well developed. Ductus bursae relatively wide, strongly sclerotized with ribbed surface. Bursa copulatrix transparent. No signum.

P. bolivarella (SCHMIDT) is an Iberian endemic.

Examined material:

Spain: 4 males (cotypes): „Hispania Prov. Madrid Escorial, IX 1923, SCHMIDT“, author's coll.

Portugal: 2 females „Soalheira“, author's coll.

***Pediasia desertella* (LEDERER, 1855)**

[Pl. XLVI, fig. 5, pl. LXI, fig. 1, pl. XC, fig. 6]

Crambus desertellus LEDERER, 1855, Verh. Zool.-bot. Ver. 5: 220, pl. 4, fig. 7.

Antennae brown, in male deeply serrate, in female rather setaceous. Palps brownish. Frons rather flat, rounded, brownish. Head, patagia, thorax, and tegulae brownish. Length of the fore wing varies from 7 to 11 mm, width from 3 to 4,5 mm. Costal margin almost straight, apex pointed, outer margin visibly oblique. Ground of the fore wing greyish-brown. Transverse bands dark brown, rather sharply visible. Outer one below the costal margin strongly arched toward the outer margin, with very indistinct tooth underneath, pointed towards the outer margin. Inner band strongly oblique, of a similar shape as in the related species. Dark dots at the outer margin well developed. Cilia on the outer margin unicolour brownish. Hind wings rather dull, light greyish-whitish, with somewhat paler cilia.

Male genitalia [pl. XLVI, fig. 5]: uncus pointed at the end, curved. Gnathos terminated by slight widening. Saccus strongly elongated, narrow. Pars basalis well developed, long, narrow shovel-like. A secondary process of pars basalis. Valva visibly narrowed at the end, rather pointed. Aedeagus narrow, long, somewhat longer than the whole copulatory apparatus. Vesica terminated by a rather strong prong. One cornutus, very long, narrow.

Female genitalia [pl. LXI, fig. 1): gonapophyses anteriores absent. Ostium bursae strongly developed, with small

incision, accreted to lamella subgenitalis. Ductus bursae transparent, weakly sclerotized. Bursa copulatrix narrow, long, transparent. No signum.

P. desertella (LED.) is a Mediterranean element, reported from Sicily by MARIANI (1939).

Examined material:

Holotype: „Beirut“, „*Desertellus* m. Beirut“, „Origin“, coll. Zoological Museum of the Humboldt University, Berlin.

Allotype: „Beirut“, „coll. LED.“, „*desertellus* LD.“, „Origin“, coll. Zoological Museum of the Humboldt University, Berlin.

1 male and 1 female spec. from Palestine, author's coll.

GROUP 2

Group type: *Pediasia siculella* (DUP.)

I include only one species here, viz. *P. siculella* (DUP.). The systematic position of this species is not clear, because I do not know the female of it. On the basis of the presence of the prong at the end of aedeagus in the male genitalia one could consider it as belonging to section B, however, the lack of bifurcation of pars basalis speaks rather for placing it in section A. The female genitalia could decide here for in the species of section B ostium bursae is strongly accreted to lamella subgenitalis while in the species of section A this connection is weak.

Pediasia siculella (DUPONCHEL, 1836)

[Pl. XLIV, fig. 6, pl. XC, fig. 7]

Crambus siculellus DUPONCHEL, 1836, Hist. Nat. Lép. France 10: 136, pl. 275, fig. 7.

Male: antennae unicolour brown, distinctly serrate from below. Palps brown, a little paler inside. Frons very slightly convex, rounded, light brownish. Head light brownish. Thorax, tegulae and patagia brown. Length of the fore wing varies from 8 to 9 mm, width from 2,8 to 3 mm. Costal margin almost straight, apex pointed, outer margin straight, visibly oblique. Ground of the fore wing dull, brown. Two transverse

bands of the shape of dark brown streaks with not sharply drawn edges. Outer band angled in the upper part with a small convexity above dorsal margin. Inner band strongly oblique, straight. Dark dots at the outer margin well developed. Cilia on the outer margin unicolour, almost dull, brownish. Hind wings with slight lustre, greyish. Cilia of hind wings distinctly lighter than ground of wing, whitish.

Male genitalia [pl. XLIV, fig. 6]: uncus sharply pointed. Gnathos bluntly truncate at the end. Its length corresponds to that of uncus. Saccus wide, short. Pars basalis strongly developed, of the shape of a long curved prong, somewhat similar to that of the species of the *P. fascelinella* (HBN.) — group. It reaches almost to the end of valva. This prong is detached from valva a little behind the middle of it, and rather indistinctly bordered from it. Valva strongly narrowed and rounded at its end. Aedeagus as long as the whole copulatory apparatus, narrow, a little curved. Vesica ending with a distinct, strongly curved prong. One long cornutus.

Unfortunately I do not know the female of this species.

P. siculella (DUP.) is a Mediterranean insular element. It is reported from Sicily and Malta.

Examined material:

Several males from Malta, IX—X 1953, leg. DE LUCCA, author's coll. One male from Sicily: „Mistretta, 1000 m, Sicilia, 14 IX 1938, coll. H. REISER, Wien“. One male from Sicily: „Castelcaccia 20 X 1920 M. MARIANI“, author's coll.

Genus *Thisanotia* HÜBNER, 1825

Typus generis *Phalaena chrysonuchella* SCOPOLI, 1763

Crambus FABRICIUS, 1798, Supplementum Entomologiae Systematicae (partim).

Thisanotia HÜBNER 1825, Verzeichniss bekannter Schmettlinge (partim).

I think that this genus deserves to be separated. The species which I include here, that is *Th. chrysonuchella* (SCOP.) and *Th. lucella* (H.-S.), are very peculiar and characteristic in the structure of their genitalia. One of the most important features here is the lack of signum on bursa copulatrix of the females. According to this the species of the genus *Pediasia* HBN.

could be placed here as its representatives are also characteristic by the lack of signum. The species of *Thisanotia* HBN., however, differ so much from the species of the genus *Pediasia* HBN. when other features are concerned, that I treat in this case the lack of signum as a convergent feature. Male genitalia of *Th. chrysonuchella* (SCOP.) and *Th. lucella* (H.-S.) differ very much from each other but they have several common features. There occurs a well developed pars basalis and a ventral strong process on valva. The process on valva situated ventrally is a feature rarely met with in the species of the group *Crambus* F. s. l. This second process is almost always situated laterally and on the inner side of valva. Beside aedeagus is armed at the end with a strong prong. In the design of the wings both species are very different. *Th. chrysonuchella* (SCOP.) is similar a little to the species of the genus *Chrysocrambus* gen. n. while *Th. lucella* (H.-S.) shows a strong similarity to the species of the genus *Crambus* F. s. str.

The lack of signum on bursa copulatrix in the female genitalia is evident also in the species of the genus *Xanthocrambus* BLESZ. Those species, however, differ from the species of the genus *Thisanotia* HBN. In case the genera *Thisanotia* HBN. and *Xanthocrambus* BLESZ., would not be separated, they should be joined with the genus *Pediasia* HBN. In this case we would obtain an aggregation of species characteristic by the lack of signum in female genitalia. In result a collective genus similar to the former *Crambus* F. s. l. would be established and I want to avoid this. In my systematics I try to place the species into genera in such a manner that these units should be more or less equal in systematic level.

GROUP 1

Group type: *Thisanotia chrysonuchella* (SCOP.)

Only one species belongs here, *Th. chrysonuchella* (SCOP.). On the fore wing beside the outer band the inner one is marked. The basal stripe absent. In male genitalia pars basalis is detached from the valva near its end.

***Thisanotia chrysonuchella* (SCOPOLI, 1763)**

[Pl. XLVII, fig. 3, pl. LVIII, fig. 8, pl. XCI, fig. 4]

Phalaena Chrysonuchella SCOPOLI, 1763, *Entomologia Carniolica*: 246.*Tinea Culmella* DENIS & SCHIFFERMÜLLER, 1775, (nec LINNAEUS),

Syst. Verz. Schmett. Wien. Geg.: 134 (s. TREITSCH.).

Phalaena Tinea campella HÜBNER, 1793, *Samml. Vög. Schmett.*: 9, pl. 38.*Tinea campella* HÜBNER, 1796, *Samml. Eur. Schmett.*: 28, pl. 7, fig. 44.*Palparia campea* HAWORTH, 1811, *Lepidoptera Britannica* 3: 489.*Chilo Chrysonuchellus* Germar & Zincken, 1817, *Magazin Entomol.* 2: 69.*Thisanotia Chrysonuchalis* HÜBNER, 1825, *Verz. Bek. Schmett.*: 367.*Crambus chrysonuchellus* STEPHENS, 1834, *Illustr. Brit. Entomol.**Haustellata* 4: 325.

Antennae dark grey, in male serrate from below, in female setaceous. Palps lustrous, dark olive-brown with slight suffusion of orange scales from above. Frons lustrous, dark-grey, slightly convex, rounded, smooth. Head orange. Patagia, thorax, and tegulae dark grey. Length of the fore wing varies from 10 to 12,5 mm, width from 4,5 to 5 mm. Sexual dimorphism in the shape of the fore wings not evident except for costal margin which is slightly bent in female while being almost straight in male. Apex mildly rounded. Outer margin delicately wavy. Ground of the fore wing olive with a suffusion of black scales. Veins paler, whitish. Inner band is drawn as a dark stripe, wide in relation to the outer one. It is not sharply bordered and sometimes it merges with the ground. Below costal margin this band is slightly bent toward the outer margin, further below slightly oblique toward the base of the wing, sometimes vertical to the dorsal margin. Often inner band with a little sharp tooth above dorsal margin pointed to the outer margin. The outer band narrow, as a dark line bordered with white from outside. Below the costal margin this band is distinctly wider than further on. Outer band widely arched toward the outer margin. Its maximal approach to the outer margin is distinctly above the middle of the wing width. Several black dots at the outer margin, in the lower part of the wing. Cilia of the outer margin golden with strong metallic lustre. Hind wings grey, sometimes brownish-grey with delicate whitish

line running near the edges. Cilia of the hind wings white, with dark basal streak of scales.

Male genitalia [pl. XLVII, fig. 3]: uncus and gnathos equally long. Uncus pointed, gnathos blunt at the end. Pars basalis developed as a strongly sclerotized hook with wide base. It is detached from valva near its base. The basal part of valva, particularly membrana valvae interna, distinctly more sclerotized than the apical part of valva. On the border of the weakly sclerotized apical part of valva and the strongly sclerotized vertical part a very strong hook-like process, longer than pars basalis. It is situated ventrally which is a very rare phenomenon in the species of the generic group *Crambus* F. s. l. and a feature characteristic for the species of the genus *Thisanotia* HBN. Aedeagus strongly bent with eight cornuti. They have the shape of bent prongs slightly widened at the base. The biggest of them are in the vertical part of aedeagus. Approaching the end of aedeagus these prongs become smaller. Cornuti scattered and not grouped together near each other. Vesica with a strong slightly bent prong at the end. This prong is distinctly longer and wider than the biggest of cornuti.

In female genitalia [pl. LVIII, fig. 8) gonapophyses anteriores absent. Lamella subgenitalis weakly sclerotized. Ductus bursae transparent, weakly sclerotized, without a loop. Bursa copulatrix transparent, no signum.

Th. chrysonuchella (SCOP.) is a species known thus far from Europe where it is widely distributed. It is a lowland element confined to the dry regions. In the Alps it reaches its maximum height at 1600 m. In Tatry Mts. it is absent altogether. It appears first of all species of the generic group *Crambus* F. s. l., already in the middle of April. The caterpillar feeds on various grasses.

Examined material:

France: 3 males: Digne et environs Basses Alpes, 25 V — 8 VI 1946, CH. FISCHER“, author's coll. 1 female: „Riestal près Mulhouse Ht.-Rhin, 17 V 1950, CH. FISCHER“, author's coll. 1 female: „Trois Epis Turckheim Ht.-Rhin, 21 V 1951, 6—700 m, CH. FISCHER“, author's coll. 1 male and 1 female: „Grenoble, 2 V 1951, LANGER“, author's coll.

Germany: 1 male: „Süd-Pfalz Kleine Kalmit, 8 VI 1949, leg. DE LATTIN“, author's coll. 5 males and females: „Süd-Pfalz Albersweiler, 8 VI 1949, leg. DR. DE LATTIN“, author's coll.

Austria: 8 males and females: „14 V 1950, Carinthia Karawanken Ogrisalpe leg. THURNER“, author's coll.

Italy: 15 males and females: „15 V 1950, Gemona Friani Italia, coll. THURNER“, author's coll.

Poland: 1 female: „Sudety Duszniki“, author's coll. 64 males and females from Podgórk, distr. Kraków, 28 IV — 16 VI 1946—1951, author's coll. 5 males from Bogucice, distr. Pińczów, 27 V 1953, author's coll. 2 females from Chotel Czerwony, distr. Busko, 2 VI 1947, author's coll. 9 males and females from Pieniny, Czorsztyn, V 1949—1950, leg. and coll. TOLL.

USSR: 11 males and females from Western Podolia (Ubierzowa, Zaleszczyki, Babińce, V 1930—1937), leg. and coll. TOLL.

GROUP 2

Group type: *Thisanotia lucella* (H.-S.)

One species belongs here, viz. *Th. lucella* (H.-S.) which in habitus is very similar to the species of the genus *Crambus* F. s. str. by the presence of the basal stripe, and one narrow outer band. In genitalia we may find several features common with the previous species. In male a strong ventral process on valva. Pars basalis strongly developed. Vesica ending with a strong prong.

Thisanotia lucella (HERRICH-SCHÄFFER, 1849)

[Pl. XLVII, fig. 2, pl. LVIII, fig. 7, pl. XCI, fig. 1—2]

Crambus Lucellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 59, Spl. 135.

Antennae unicolour, brown, in male serrate, in female setaceous. Palps, frons, head, patagia, thorax, and tegulae brown. Length of the fore wing varies from 10,5 to 13 mm, width from 4,2 to 5 mm. Costal margin in male delicately convex, in female almost straight. Apex pointed. Outer margin almost straight. Ground of the fore wing brown to yellowish-brown, with white design. Basal stripe white or creamy, narrow, bifurcated at the end. The upper of these bifurcations is distinctly longer than the lower one. Basal stripe longitudinally divided by a streak of brown scales; it ends distinctly before

the outer band. Below the costal margin a white stripe running from wing base to the middle of wing. It is often darkened with brown scales, limited at its end by a brown oblique streak, which is connected with the end of the upper bifurcation of the basal stripe. Between the end of the basal stripe and the outer band several white streaks divided by brown scales. In females these dividing brown streaks are often reduced and then the whole area is paled, whitish. The whole brown ground is suffused with black scales. Outer band strongly arched toward the outer margin, narrow, brown on the inner side, bordered with white on the outside. This white bordering below the costal margin is a little wider than in lower part of band. Below apex near the outer margin a more or less distinctly visible small creamy spot. Several small black dots bordered yellow near the lower part of the outer margin. Cilia on the outer margin golden, with strong metallic lustre, below apex whitish at the base. Hind wings brown. Cilia lighter whitish, with dark streak of basal scales. Females usually lighter coloured than males, and with less visible design, which is a little reduced on the whitish pale ground.

Male genitalia [pl. XLVII, fig. 2]: uncus a little bent, pointed at the end, strongly narrowed. Gnathos of the same length as the uncus, curved, sharply pointed at the end. Saccus oblong. Pars basalis well developed, in the shape of a long sheet, bent hook-like at the end. It is accreted to valva on $\frac{2}{3}$ of its length. Only its narrowed curved end is detached from the valva. The ventral side of valva provided with strong curved shovel-like process. Aedeagus a little longer than the whole copulatory apparatus, distinctly bent, with a strong prong at the end. Single, very long, narrow, distinctly bent cornutus. Its length corresponds to half the whole length of aedeagus.

In the female [pl. LVIII, fig. 7] lamella subgenitalis narrow, with distinctly normally developed gonapophyses anteriores. Gonapophyses posteriores very long, narrow. Lamella subgenitalis strongly accreted to ostium bursae. Ostium bursae with ductus bursae is trumpet-shaped. No signum.

Th. lucella (H.-S.) is an Alpine element. It is distributed in the South Alps, South Carpathians, and mountains of China.

It is probably a thermophilous species as is shown by its distribution in Europe.

Examined material:

Alps: Several males and females from Carniola, coll. I. Z. P. A. S., Warszawa and author's coll.

Genus *Chrysocrambus* gen. nov.

Typus generis: *Crambus cassentiniellus* ZELLER, 1849

Crambus FABRICIUS, 1798, Supplementum Entomologiae Systematicae (partim).

Thisanotia HÜBNER, 1825, Verzeichniss bekannter Schmettlinge (partim).

This genus comprises several species distributed generally in the Mediterranean region. All these species are externally very similar to each other, however, they differ usually in the structure of their genitalia. On the fore wing there is a sharp design consisting of dark and light streaks, interrupted by two dark transverse bands. According to the male genitalia the species of *Chrysocrambus* gen. nov. form two distinct groups and I consider these groups as two subgenera: *Chrysocrambus* subgen. nov. s. str. and *Chrysocramboides* subgen. nov. At present it is very difficult to characterise the common features of their genitalia, because only a few species of *Chrysocrambus* gen. nov. are known in both sexes. The females of several species of *Chrysocrambus* gen. nov. are still unknown.

Subgenus *Chrysocrambus* subgen. nov. s. str.

Typus subgeneris *Crambus cassentiniellus* ZELLER, 1849.

In male genitalia: reduction of pars basalis, and lack of other processes on valva is a very important feature. Important specific features in the species of this subgenus are found in the shape of anellus. In female genitalia: one signum on bursa copulatrix, however, sometimes, it is completely reduced. The accretion of lamella subgenitalis and ostium bursae weak. Gonapophyses anteriores reduced.

***Chrysocrambus (Chrysocrambus) cassentiniellus* (ZELLER, 1849)**

[Pl. XLVIII, fig. 6, pl. LXI, fig. 4, pl. XCII, fig. 1, 2]

Crambus rorellus DUPONCHEL, 1836, (nec LINNAEUS), Hist. Nat. Lép. France, 10: 73, pl. 269, fig. 5 b.

Crambus cassentiniellus ZELLER, Zeit. Ent. Stett. 1849: 312.

Crambus cassentiniellus HERRICH-SCHÄFFER, 1849 [sic!], Syst. Bearb. Schm. Eur. 4: 59.

Crambus craterellus OBRAZTSOV, 1954, (nec SCOPOLI), Zeit. Wien. Ent. Ges. 39: 254.

Crambus craterellus var. *cassentiniellus* auct.

Antennae brown, in male serrate, in female setaceous. Palps with distinct lustre, olive-golden. Head yellowish. Patagia and thorax with metallic lustre, olive-golden. Costal margin delicately convex, often almost straight. Apex rather rounded. Outer margin delicately bent outwards, often somewhat wavy. Wing design very similar as in next species. On the brown golden ground several whitish streaks which run alongside the veins. Sometimes the basal part of these streaks is darkened golden as far as inner band. Outer and inner band sharply delineated, golden-brown, of variable width. They are bent toward the outer margin. The lighter area in apex is not divided by a dark streak, as in *Ch. (Chrysocramboides) craterellus* (SCOP.). Two or three black dots in lower part of outer margin. Cilia on this margin with strong metallic lustre, golden. Hind wings brownish, often with darkened margins at apex and below it. Cilia white or creamy-whitish.

ab. *distinctus* (MÜLLER-RUTZ, 1920)

Crambus rorellus DUPONCHEL, 1836 (nec LINNAEUS) (partim), Hist. Nat. Lép. France 10: 73, pl. 269 fig. 5 a.

Crambus cassentiniellus var. *HERRICH-SCHÄFFER*, 1852, Syst. Bearb. Schmett. Eur., pl. 23, fig. 161.

Crambus cassentiniellus distinctus MÜLLER-RUTZ, 1920, Mitt. Ent. Zürich 5: 335, pl. 2, fig. 2.

Crambus craterellus ab. *distincta* OBRAZTSOV, 1954 (nec SCOPOLI, Zeit. Wien. Ent. Ges. 39: 255.

The specimens with the strong darkened fore wings.

Male genitalia: uncus [pl. XLVIII, fig. 6] distinctly wider at its base than at its end, pointed. Gnathos terminated by

very small hook. Saccus oval. Valva very simple. Pars basalis reduced. Other processes are absent. Aedeagus slender, bent, somewhat shorter than the whole copulatory apparatus.

In female genitalia [pl. LXI, fig. 4] lamella subgenitalis narrow, ring-like, weakly accreted to ostium bursae. Gonapophyses anteriores absent. In their place there are only very slight protuberances of lamella subgenitalis. Ostium bursae tubular, straight, distinctly better sclerotized than the rest of ductus bursae. Ductus bursae curved, without loops, rather short. Bursa copulatrix transparent. One small signum.

Ch. (Ch.) cassentiniellus (ZELL.) is a Pontic-Mediterranean element very common in South Europe. It is also reported from England but most probably these specimens were brought from the South by ships.

Examined material:

Italy: 2 males: „Cuneo Frabosa Soprana, 19 VII 1948, A. FIORI“, author's coll. 1 male and 1 female: „Bologna Torr. Ravone, 13 VI 1949, A. FIORI“, author's coll. 1 male: „Emilia Reno, 17 VI 1928, A. FIORI“, author's coll.

Yugoslavia: 1 male: „Dalm. Ins.-Arbe Loparo, 17—30 VI 1934, ZERNY, author's coll.

USSR: Several males from Sarepta, coll. I. Z. P. A. S., Warszawa.

***Chrysocrambus (Chrysocrambus) sardiniellus* (TURATI, 1911)**

[pl. XLVIII, fig. 5, pl. XCII, fig. 3]

Crambus craterellus subsp. *sardiniellus* TURATI, 1911, Bull. Soc. ent. France: 293, fig.

Crambus sardiniellus MÜLLER-RUTZ, 1931, Mitt. schweiz. Ent. Ges. 15/2: 36, pl. 1, fig. 4, 16.

Male: Antennae unicolour, dark brown-grey, rather flatly serrate. Frons flat, rounded, lustrous olive-brown-golden. Palps olive-brown-golden, lustrous. Head, patagia, thorax, and tegulae unicolour, of similar colouring as frons. Length of the fore wing about 10 mm, width about 4 mm. Costal margin visibly convex, apex rounded. Outer margin distinctly wavy and slightly oblique below apex. Dark and light streaks on the fore wings similar as in *Ch. (Ch.) cassentiniellus* (ZELL.). Veins. marked paler, areas between them are dark. The dark streaks

brown, while in the previous species they are rather brownish-golden. Inner band delicately arched, sharply delineated, similar as in previous species. Outer band visibly bordered with white. This bordering is reduced in related species of the genus *Chrysocrambus* gen. nov. 9 dark streaks in area between outer band and outer margin, similarly as in *Ch. (Ch.) craterellus* (SCOP.). In the previous species only 8 dark streaks in this area, because the first of them below apex is not bifurcated as in the species in question. Dark dots at the outer margin well developed. Cilia on the outer margin with strong metallic lustre, olive-golden. Hind wings almost dull, dark brown. Cilia of the hind wings dirty whitish with dark brown basal streak of scales.

Male genitalia [pl. XLVIII, fig. 5] somewhat similar as in the previous species. Uncus a little more slender than in *Ch. (Ch.) cassentiniellus* (ZELL.). Tegumen and saccus visibly smaller than in the previous species. Valva rounded without any process. Aedeagus visibly shorter than the whole copulatory apparatus. It is distinctly wider than in *Ch. (Ch.) cassentiniellus* (ZELL.), straight, distinctly narrowed at the end. One cornutus [absent in *Ch. (Ch.) cassentiniellus* (ZELL.)].

Ch. (Ch.) sardiniellus (TRTI.) is known as a Sardinian endemic.

Examined material:

Several male specimens from Sardinia, author's coll.

Chrysocrambus (Chrysocrambus) cornutellus
(PIERCE & METCALFE, 1938)

[Pl. XCII, fig. 4]

Crambus cornutellus PIERCE & METCALFE, 1938, Gen. Brit. Pyr. Delt.
Plumes: 20, pl. 12.

A species very similar to *Ch. (Ch.) sardiniellus* (TRTI.). Externally somewhat darker than the latter. Male genitalia of both species also rather similar. Aedeagus in *Ch. (Ch.) cornutellus* (PIERCE & MET.) longer than in *Ch. (Ch.) sardiniellus* (TRTI.), more uniformly narrowing at the end. Cornutus shorter than in *Ch. (Ch.) sardiniellus* (TRTI.), the minute cornuti somewhat larger and less numerous than in the latter species. The original description

of the female copulatory apparatus is as follows: „Ostium with strong lip. Ductus bursae thickened. Signum one, scobinate“.

The question is debatable whether *Ch. (Ch.) cornutellus* (PIERCE & MET.) is a distinct species or only a subspecies of *Ch. (Ch.) sardiniellus* (TRTL.). Their distribution is an argument in favour of their specific difference, as *Ch. (Ch.) cornutellus* (PIERCE & MET.) is a Spanish endemic, while *Ch. (Ch.) sardiniellus* (TRTL.) is known only from Sardinia. There are no data till now on the finding of these species in Italy or France. According to PIERCE and METCALFE the specimens they described were caught in England. Most probably they were brought there from the South on ships, as it seems improbable that a species belonging to a typically Mediterranean group should inhabit England.

Examined material:

Spain: 1 male: „Andalusia H I Algeciras, V 1925, PREDOTA“, coll. Museum of the Natural History in Vienna.

Chrysocrambus (Chrysocrambus) dentuellus

(PIERCE & METCALFE, 1938)

Crambus dentuellus PIERCE & METCALFE, 1938, Gen. Brit. Pyr. Delt. Plumes: 20, pl. 12.

According to the drawing made by PIERCE and METCALFE the male copulatory apparatus of *Ch. (Ch.) dentuellus* (PIERCE & MET.) is nearly identical to that of *Ch. (Ch.) cornutellus* (PIERCE & MET.). According to the original description, cornutus is thicker and longer in *Ch. (Ch.) dentuellus* (PIERCE & MET.) than in *Ch. (Ch.) cornutellus* (PIERCE & MET.). A drawing of the female genitalia is given together with the drawing of the male one, however, the former is without legend, but its meaning may be guessed from the description of the female copulatory apparatus. It results from this description and drawing that *Ch. (Ch.) dentuellus* (PIERCE & MET.) has no signum on bursa copulatrix, but a strongly sclerotized area appears in its place. This is peculiar, as such a feature is not found in *Crambidae*. Maybe a bit of chitin remained on bursa copulatrix in consequence of a fault in preparation, which caused an artefact.

Subgenus *Chrysocramboides* subgen. nov.

Typus subgeneris *Phalaena Craterella* SCOPOLI, 1763

I place only one European species in this subgenus, viz. *Ch. (Ch.) craterellus* (SCOP.). From outside Europe I know only two species of this subgenus, viz. *Ch. (Ch.) syriellus* (ZERNY) and *Ch. (Ch.) kobelti* (SAALM.). *Ch. (Ch.) syriellus* (ZERNY) occurs in the Middle East and *Ch. (Ch.) kobelti* (SAALM.) in North Africa. *Ch. (Ch.) craterellus* (SCOP.) is distributed in the Ponto-Mediterranean region. I do not know any reports of appearance of this species in either Central or East Asia.

The following features should be mentioned as essential: the presence of two signa on bursa copulatrix in the female genitalia. Further the female genitalia are characteristic by the lack of a distinct strong accretion of lamella subgenitalis to ostium bursae, and the lack of gonapophyses anteriores. In the male genitalia pars basalis is well developed, very distinctly separated from valva. Beside this process there are no others on valva. Aedeagus unarmed with strong cornuti. Externally the species of the subgenus *Chrysocramboides* subgen. nov. are very similar to the species of the subgenus *Chrysocrambus* subgen. nov. s. str.

Chrysocrambus (Chrysocramboides) craterellus (SCOPOLI, 1763)

[Pl. XLVIII, fig. 4, pl. LXI, fig. 3, pl. XCII, fig. 5—8]

Phalaena Craterella SCOPOLI, 1763, Entomol. Carniolica: 246.

Phalaena Tinea Rorella LINNAEUS, 1767, Syst. Nat. Ed. XII: 886.

Tinea linetella FABRICIUS, 1781, Spec. Ins. 2: 291.

Tinea chrysonuchella HÜBNER, 1796, (nec SCOPOLI), Samml. Eur. Schmett.: 28, pl. 7, fig. 43.

Crambus lineatus FABRICIUS, 1798, Suppl. Entomol. Syst.: 470 (s. ZELL.).

Chilo Rorellus GERMAR & ZINCKEN, 1817, Magazin Entomol. 2: 63.

Thisanotia Roralis HÜBNER, 1825, Verz. Bek. Schmett.: 367.

Crambus rorellus STEPHENS, 1834, Illustr. Brit. Entomol. *Haustellata* 4: 326.

Crambus craterellus WOCKE, 1871, STGR.-WOCKE Catal. Lep. Eur. Faun.: 218.

Crambus Klimeschi TOLL, 1938, Ann. Mus. Zool. Polon. 13: 206, pl. 12, fig. 4, pl. 13, fig. 19.

Antennae brownish-grey, in male serrate from below, in female setaceous. Palps very long, slender, lustrous, olive-grey. Frons slightly convex, smoothly rounded, lustrous, blackish. Head orange or orange-yellowish. Patagia, tegulae, and thorax with metallic lustre, olive-greyish. Length of the fore wing varies from 9 to 12 mm, width in female 3,5—3,7 mm, in male 4—5 mm. Costal margin straight or delicately convex. Apex rounded in male, more pointed in female. Outer margin in the middle of the wing width delicately angled, in female somewhat more oblique than in male. Fore wing with bicolour design consisting of brown and light streaks. The light ones run along the veins and are generally better developed than the dark ones. The light streaks vary in colour; they are white, white-yellowish, or yellow. The streaks are interrupted sharply by two transverse bands. These bands run similarly as in *Thisanotia chrysonuchella* (SCOP.). Outer one in its upper part slightly bent toward the outer margin, it runs more or less vertically to the dorsal margin, a little wavy. Outer band more or less, often irregularly, arched toward the outer margin. Inner one somewhat wider than the outer one. 9 dark streaks between the outer margin and the outer band. This is important feature by which this species differs from the very similar *Ch. (Chrysocrambus) cassentiniellus* (ZELL.). In *Ch. (Ch.) cassentiniellus* (ZELL.) are only 8 of these streaks because the first of them, that under apex, is not bifurcated as in *Ch. (Ch.) craterellus* (SCOP.). Several dark dots at the outer margin. Cilia on the outer margin golden with strong metallic lustre. Hind wings brownish-grey, dull. Cilia of the hind wings white or creamy with dark basal streak.

subsp. *stachiellus* (TOLL, 1938).

Crambus stachiellus TOLL, 1938, Ann. Mus. Zool. Polon. 13: 206, pl. 12, fig. 5, 6, pl. 13, fig. 20.

This subspecies was described by TOLL (1938) as species bona. As there are no genital differences between it and *Ch. (Ch.) craterellus* (SCOP.). „*Crambus*“ *stachiellus* TOLL should be considered as a subspecies of *Ch. (Ch.) craterellus* (SCOP.).

It is an East-European race of the species in question. The specimens of subsp. *stachiellus* (TOLL) are smaller than

the typical ones, and have a little narrower and more pointed fore wings. This subspecies is distributed from Podolia to Sarepta and possibly further to the East.

Male genitalia [pl. XLVIII, fig. 4]: uncus slender, pointed. Gnathos narrow, as long as the uncus, at the end pointed. Saccus strongly elongated. Valva relatively narrow, rounded. Pars basalis strongly developed as a curved, strongly sclerotized, distinctly bordered and separated from valva sheet. Aedeagus visibly curved. Two big and several small cornuti.

Female genitalia [pl. LXI, fig. 3]: lamella subgenitalis narrow. Gonapophyses anteriores absent. The accretion between lamella subgenitalis and ostium bursae very weak, transparent. Ductus bursae strongly sclerotized with ribbed surface. Bursa copulatrix small, transparent. Two distinct, star-like signa.

Examined material:

France: 1 male: „St. Pyrréol près Nyons Drome, 23 VII 1948, CH. FISCHER 750 m“, author's coll. 1 male: „Ile d'Aix Chozeulé maritime, 9 VI 1953“, author's coll. 1 male: „Auzay Vendée, 26 V 1953“, author's coll. 1 male: „Montpellier (Hérault), 1 VII 1953“, author's coll. 7 males: „Briançon Mt. St. Pierre Ht.-Alpes 1500 m, 3—27 VII 1951, CH. FISCHER“, author's coll.

Germany: 4 males: „Grünstadt 26 V — 13 VI 1949, JÖST“, author's coll.

Hungary: 2 males: „Ujszász, SCHMIDT, 23 VI 1915“, author's coll.

Italy: 10 males: Parco N. Abruzzo-Pascasseroli and Ovindoli, VI 1933—1949, leg. A. FIORI, author's coll.

Czechoslovakia: 1 male: „Morava Breclav 22 V 1936, DR. RUD. SCHWARZ“, author's coll. 1 male and 1 female: „Slovakia Sosár—Kiarov (Ipel), VI 1936, DR. RUD. SCHWARZ“, author's coll.

Albania: 1 female: „Albania Galica, LUMA“, coll. Hungarian National Museum in Budapest.

Poland: 1 male: „Tatry Łomik 1100 m, 12 VI 1951, BLESZYŃSKI“, author's coll. 2 males from Czorsztyn (Pieniny Mts.), leg. ŻUKOWSKI.

USSR: 4 males: „1866—1872, Rossia m. Sarepta CHR.“, coll. I. Z. P. A. S., Warszawa. 3 males from Podolia, coll. I. Z. P. A. S., Kraków.

Genus *Xanthocrambus* BLESZYŃSKI, 1955

Typus generis: *Crambus delicatellus* ZELLER, 1863

Crambus FABRICIUS, 1798, Supplementum Entomologiae Systematicae (partim).

Chilo GERMAR & ZINCKEN, 1817, Magazin für Entomologie (partim).

Xanthocrambus BLESZYŃSKI, 1955, Zeit. Wien. Ent. Ges.

This genus consists of the species, which are characteristic by the following complex of features: fore wings pale with a yellow tinge. They are without design or with indistinct traces of transverse bands and sometimes a dark small dot in the middle of the wing. Cilia on the outer margin of the fore wings lustrous. No signa in female genitalia on bursa copulatrix. Ductus bursae without loop, strongly sclerotized, gonapophyses anteriores developed, lamella subgenitalis strongly accreted to ostium bursae. In male genitalia pars basalis variously developed but never in the shape of a hook. Cornuti present in aedeagus.

Some features of this genus make it related to such genera as *Pediasia* HBN. or *Thisanotia* HBN. but it visibly differs from them. The lack of signa on bursa copulatrix is a feature characteristic for all these genera.

GROUP 1

Group: type *Xanthocrambus delicatellus* (ZELL.)

Two European species belong here: *X. delicatellus* (ZELL.) and *X. occidentellus* (CAR.). They are characteristic by the distinct strong development of pars basalis in the male genitalia. *X. occidentellus* (CAR.) and *X. saxonellus* (GERM. & ZINCK.), species of the second group of the genus in question present a pair of species rather similar in the design and coloration of the wings. According, however, to the very great differences in the male genitalia I place them in different groups.

***Xanthocrambus delicatellus* (ZELLER, 1863)**

[Pl. XLVIII, fig. 1, pl. LXI, fig. 8, pl. XCI, fig. 7]

Crambus delicatellus ZELLER, 1863, Chil. Cramb. Gen. Species: 41.

Crambus amseli HARTIG, 1951, Fragm. Ent. 1: 46.

Xanthocrambus delicatellus BŁESZYŃSKI, 1955, Zeit. Wien. Ent. Ges. 40: 267, fig. 1.

Antennae yellowish from above, in male distinctly serrate from below, in female setaceous, delicate serrated at the base.

Palps pale yellowish outside, snow white on upper and inner side and underneath. Frons rather strongly convex, snow white. Head and patagia snow white. Thorax and tegulae white-yellowish. Length of the fore wing about 9,5 mm, greatest width about 3,5 mm. Costal margin rather straight, apex in the type slightly rounded, that in the specimens from France more pointed, outer margin in the type straight, very delicately oblique, that in the specimens from France a little convex underneath apex. Fore wings dull, pale whitish-yellow with very slight traces of two transverse bands similarly directed as in *X. occidentellus* (CAR.). Outer band below costal margin arched toward the outer margin, below more or less parallel with it, above dorsum delicately convex toward the outer margin. Traces of the inner band visible only above the dorsal margin. This band is strongly oblique toward base of wing. Three black dots at the outer margin, above tornus. Cilia on the outer margin lustrous, those in the type brown-golden, while in French specimens, in lower part of wing whitish at their base. Hind wing with very delicate lustre, whitish with white cilia.

Male genitalia [pl. XLVIII, fig. 1]: uncus relatively short, rather wide. Gnathos more slender with a delicate hook near its end. Saccus well developed, strongly elongated. Its length corresponds to that of valva. Pars basalis strongly developed as a sheet-like process detached near the end from valva and rounded. On the ventral side of valva a strongly sclerotized sacculoidal fold terminated by process. This fold is narrower and longer than in *X. occidentellus* (CAR.). Valva strongly narrowed near the end. Aedeagus longer than the whole copulatory apparatus with 8-9 cornuti of various size. Near the end of aedeagus three very small cornuti, further on four large ones still further one arched cornutus 0,6 mm long.

In female genitalia [pl. LXI, fig. 8] gonapophyses posteriores relatively wide. Lamella subgenitalis narrow. Gonapophyses anteriores less developed than in *X. occidentellus* (CAR.) and *X. saxonellus* (GERM. & ZINCK.), they have the shape of short, relatively wide processes. Lamella subgenitalis strongly accreted to ostium bursae. Ostium bursae somewhat wider

than ductus bursae and as strongly sclerotized as the latter, ribbed. Ductus bursae without loop, about 2 mm long. Bursa copulatrix transparent, relatively small. No signum.

Xanthocrambus delicatellus (ZELL.) described by ZELLER (1863) was considered by some authors as a doubtful species. STAUDINGER and REBEL (1901) for example write: „? *Delicatellus* Z. Cr. 41 (Praec. Var.?); Sic., Gal. m. or. (MILL.)“. These authors suspected that *X. delicatellus* (ZELL.) is a form of the previous species which in this Catalogue is *Agriphila culmella* (L.). *X. delicatellus* (ZELL.) was confused also with *A. culmella* (L.) by other lepidopterologists. I myself have received from the late CH. FISCHER from France two specimens of *X. delicatellus* (ZELL.) labelled as „*Crambus culmellus* L.“. These I determined according to ZELLER's original description. HARTIG (1951) described a „new“ species *Crambus amseli* HARTIG. The drawing of the male genitalia of this species was in complete accordance with those of my male of *X. delicatellus* (ZELL.) from France. To be quite sure I borrowed the type of *Crambus delicatellus* ZELL. from Zoological Museum of the Humboldt University in Berlin and I investigated its genitalia. The type is also a male and its genitalia are identical with those in the specimen from France and agrees with the drawing of the genitalia of *Crambus amseli* HARTIG. *Crambus amseli* HARTIG is therefore undoubtedly a synonym of the species *Xanthocrambus delicatellus* (ZELL.). It would be interesting to know which species HARTIG considered as *delicatellus* for the latter was also reported in his work. Hartig gives further also the species „*Crambus*“ *culmellus* (L.) and therefore I think that the confusion of the species *X. delicatellus* (ZELL.) and *Agriphila culmella* (L.) did not take place.

X. delicatellus (ZELL.) is a Mediterranean species. It is known thus far from South France, Sardinia and Sicilia. It is reported also from Kasakewitsch and North Africa. It occurs in July and August.

Examined material:

Sicily: Type (male): „Sicilia“, „Origin“, „*Delicatellus* n. sp.“, „ex collect. STAUDINGER“, coll. Zool. Mus. of the Humboldt University in Berlin.

France: 1 male spec.: „Roche de Rame Ht.-Alpes, FISCHER“, author's coll. 1 female spec.: „Courthézon près Orange Vaucluse, 28—31 VII 1950, coll. CH. FISCHER“, author's coll.

***Xanthocrambus occidentellus* (CARADJA, 1910)**

[Pl. XLVIII, fig. 2, pl. LXI, fig. 7, pl. XCI, fig. 3]

? *Crambus saxonellus* var. *carentellus* CHRISTOPH, 1888, Hor. Ent. Ross. 22: 311.

Crambus saxonellus var. *occidentellus* CARADJA, 1910, Dtsch. ent. Zeit. Iris 24.

Crambus occidentellus MÜLLER-RUTZ, 1929, Mitt Schweiz. ent. Ges. 14: 125.

Xanthocrambus occidentellus BLESZYŃSKI, 1955, Zeit. Wien. Ent. Ges. 40: 268, fig. 2.

Crambus saxonellus auct. p. partim.

Antennae whitish or yellowish from above, brown from below, in male distinctly serrate, in female setaceous, delicately serrate at the base. Palps brown outside, white on upper and inner side and underneath. Frons white, a little less convex than in the previous species. Head white. Patagia yellowish at sides, whitish in the middle. Thorax and tegulae yellowish. Length of the fore wing varies from 10 to 12 mm, width from 4 to 5 mm. Costal margin straight, apex rather pointed, outer margin in male rather straight, in female delicately oblique. Ground of the fore wing almost dull, dirty yellowish. Transverse bands developed as very indistinct traces. Outer band widely arched toward the outer margin without a distinct bend above the dorsal margin characteristic for the externally similar *X. saxonellus* (GERM. & ZINCK.). Inner band oblique, straight. No small black dot in the middle of the wing, characteristic for *X. saxonellus* (GERM. & ZINCK.). Cilia on the outer margin lustrous, unicolour, brownish. Hind wings brownish, almost dull, with a little lighter cilia.

Male genitalia [pl. XLVIII, fig. 2]: gnathos visibly shorter than uncus, dagger-like at the end, pointed. Uncus sharply pointed. Tegumen wide. Saccus narrow, strongly elongated. Pars basalis developed as a strongly sclerotized sheet, wide at the base of valva, and then strongly narrowed. It is not separated from valva, and sharply bordered from it. The

ventral basal part of valva widely strongly sclerotized. This strong sclerotized sheet reaches pars basalis. Aedeagus almost as long as the whole copulatory apparatus, straight, narrow. A single, large, very long cornutus. It is longer than half of the whole aedeagus. Aedeagus terminated by several long slender prongs, which form something like bundles.

Female genitalia [pl. LXI, fig. 7]: lamella subgenitalis narrow, strongly accreted to ostium bursae. Gonapophyses anteriores well developed, short. Ostium bursae not contrasting with the rest of ductus bursae, it is the only visibly widened part of ductus bursae. Ductus bursae short, visibly shorter than in the previous species and *X. saxonellus* (GERM. & ZINCK.), wide narrowed in direction of bursa copulatrix. It is strongly sclerotized on its whole length, with ribbed surface. Bursa copulatrix transparent. No signum.

X. occidentellus (GERM. & ZINCK.) is known till now from the Alps and Western Europe. Probably the mysterious form *X. saxonellus* (GERM. & ZINCK.) f. *carentellus* (CHRIST.) from Syria is identical with the species in question. In such case this species would be a Mediterranean element.

Examined material:

France: 2 females: „Roche de Rame Ht.-Alpes, 10—26 VI 1946, 10—1400 m, CH. FISCHER“, author's coll. 1 male: „Ht.-Alpes“, author's coll.

Switzerland: 1 male: „Siders Wallis, 16 VII 1930“, coll. TOLL. 1 male: „Nalers Ob. Wallis, 9 VII 1932“, coll. TOLL.

Spain: 1 male from Andalusia, coll. I. Z. P. A. S., Warszawa.

***Xanthocrambus saxonellus* (GERMAR & ZINCKEN, 1821)**

[Pl. XLVIII, fig. 2, pl. LXI, fig. 6, pl. XCI, fig. 5]

Chilo saxonellus GERMAR & ZINCKEN, 1821, Magazin Entomol. 4: 255.

Chilo Chrysellus TREITSCHKE, 1832, Schmett. Eur. 9: 132.

Crambus saxonellus DUPONCHEL, 1836, Hist. Nat. Lép. France 10: 139, pl. 275, fig. 2.

Xanthocrambus saxonellus BLESZYŃSKI, 1955, Zeit. Wien. Ent. Ges. 40: 269, fig. 3.

Antennae lustrous, brown, unicolour, in male serrate, in female very flatly and shallowly serrate. Palps brown outside, white inside and above. Frons slightly convex, rounded, white.

Head white. Thorax and tegulae yellowish. Length of the fore wing varies from 10 to 12 mm, width from 4,2 to 5,5 mm. Costal margin almost straight. Apex rounded. Outer margin very delicately convex, slightly oblique. Ground of the fore wing varies from orange-yellow to white-yellow. Transverse bands very indistinct. Outer one widely arched toward the outer margin, brownish. Above the dorsal margin it forms a distinct convexity. Inner band oblique, straight, yellow. A distinct small black dot in the middle of the wing on the inner band. Black dots at the outer margin slightly developed.

Cilia on the outer margin lustrous, golden unicolour. Hind wings almost dull, brown-grey, with somewhat lighter cilia.

Male genitalia [pl. XLVIII, fig. 2]: uncus and gnathos slender, of equal length. Uncus pointed at the end. Gnathos terminated by a very small delicate prong. Saccus oval. No pars basalis. Only the dorsal edge of valva is narrowly thickened list-like. The whole valva strongly sclerotized to 2/3 of its length. This strongly sclerotized part of valva presents a strong ventral process. This process is bluntly truncate. Near this process is a secondary one, distinctly smaller.

Female genitalia [pl. LXI, fig. 6]: lamella subgenitalis narrow, gonapophyses anteriores well developed. Lamella subgenitalis accreted to ostium bursae by its arched prolongation. Ostium bursae developed as distinct widening of ductus bursae. Ductus bursae strongly sclerotized on its whole length, with ribbed surface. Bursa copulatrix small, transparent. No signum.

X. saxonellus (GERM. & ZINCK.) is a Pontic — Mediterranean element appearing in June and July in xerothermic regions.

Examined material:

Austria: 1 male: „Wien“, author's coll.

Yugoslavia: 1 male and 1 female: „Dalmatia mer. Umgb. Gravosa, VI, 1937, J. KLIMESCH“, author's coll.

Hungary: 1 female: „Budafok, UHRIK, 1910 VII 12“, author's coll.
1 male: „Budaörs Cesikihegyek, UHRIK, 1930 VII 22“, author's coll.

Czechoslovakia: 1 female: „Moravia Milovica, 18 VI 1946, DR. RUDOLF SCHWARZ“, author's coll. 1 male and 1 female: „Moravia, 1 VII [and] 9 VII 1946, DR. RUDOLF SCHWARZ“, author's coll. 1 male: „Bohemia Praha Podhela, 22 VII 1947, DR. RUDOLF SCHWARZ“, author's coll.

Genus *Neocrambus* gen. nov.

Typus generis: *Crambus wolfschlägeri* SCHAWERDA, 1937

Crambus FABRICIUS, 1798, Supplementum Entomologiae Systematicae (partim).

I include only one species here, viz. *N. wolfschlägeri* (SCHAW.) which is very characteristic in its habitus as well as in the structure of its male genitalia. Unfortunately I do not know the female of this interesting species. *N. wolfschlägeri* (SCHAW.) has unicoloured orange-yellow fore wings without any traces of design. Male genitalia are characteristic by its strong sclerotization. Uncus distinctly shorter than gnathos. Valva ending with a strongly sclerotized, long curved prong, which phenomenon is not met with in any other species of the generic group *Crambus* F. s. l. Pars basalis strongly developed as a narrow, strongly sclerotized hook-like process ended as a sharply pointed prong. It is distinctly bordered from the valva. This species is a Macedonian montane element.

Neocrambus wolfschlägeri (SCHAWERDA, 1937)

[Pl. XXXIV, fig. 6, pl. LXVIII, fig. 7]

Crambus wolfschlägeri SCHAWERDA, 1937, Zeit. öst. ent. Ver. 22: 55.

Male: antennae brown, very flatly serrate from below. Palps brown, whitish inside. Head, patagia, thorax, and tegulae dirty yellowish. Frons slightly convex, rounded. Length of the fore wing 9 mm, width 3 mm. Fore wing short, relatively wide. Costal margin delicately convex, apex rather pointed, outer margin below apex a little bent inwards. Ground of the fore wing dull, orange yellow, without any traces of design. Cilia on the outer margin slightly lustrous, a little paler than the ground of the wings, yellowish. No dark dots at the outer margin. Hind wings dull, dark brown. Cilia of the hind wings dirty whitish, with darker streak of basal scales.

Male genitalia [pl. XXXIV, fig. 6]: uncus wide, toothed at the end. It is distinctly shorter than gnathos. Gnathos very

narrowed at the end. The ventral edge of tegumen wavy. Saccus strongly developed. Its length corresponds almost to that of valva. Valva ending with a strong, long, curved prong. Pars basalis strongly developed, detached from valva before the terminal prong. It is sharply pointed and sharply bordered from valva. Aedeagus a little shorter than the whole copulatory apparatus, long, narrow. It is armed with distinct ventral prong, which is a termination of a strongly sclerotized list.

Thus far *N. wolfschlägeri* (SCHAW.) is known only from the mountains of Macedonia. It appears in June.

Examined material:

Yugoslavia: 2 males: „Asandzura Macedonia, 20—23 VI 1939, leg. THURNER“, author's coll.

Genus *Calamotropha* ZELLER, 1863

Typus generis: *Tinea paludella* HÜBNER, 1823—1824

Crambus FABRICIUS, 1798, Supplementum Entomologiae Systematicae (partim).

Chilo GERMAR & ZINCKEN, 1817, Magazin für Entomologie (partim).

Calamotropha ZELLÉR, 1863, Chilonidarum et Crambidarum genera et species.

This genus, separated very correctly by ZELLER (1863) in his monograph, has only two representatives in Europe, viz. *C. paludella* (HBN.) and *C. aureliella* (F. R.). Many more species of this genus occur in Central and East Asia. Genus *Calamotropha* ZELL. beside different morphological and genital features has also a different biology from other genera related to it. The biology of *C. aureliella* (F. R.) is still unknown, but the caterpillar of the species *C. paludella* (HBN.) feeds on leaves of *Typha* L. The caterpillars of species belonging to other genera of the group *Crambus* F. s. l. feed on grasses or mosses.

Externally species of the genus *Calamotropha* ZELL. resemble somewhat those of the genus *Chilo* GERM. & ZINCK. They have wide wings, without distinct design, limited to spots darker than the ground or transverse, not very sharply delineated bands. A very important systematical feature is the

reduction of proboscis, a feature not shown by species belonging to other genera of *Crambidae*. This causes considerable differences in the biology of the imago.

In male genitalia the lack of distinctly developed pars basalis is evident. The list-like thickening at the base of valva can be considered as pars basalis. Valva generally more sclerotized than in species of the other genera of *Crambidae*. It is bluntly truncate at the end and of trapezoidal shape. I did not find this feature till now in other genera of the group in question. In aedeagus there appear prong-like cornuti in variable number. Female genitalia differ more than the male ones from other genera of the group *Crambus* F. s. l. Labia are accreted together while in species of other genera of the generic group *Crambus* F. s. l. they are quite isolated from each other. Labia in the species of *Calamotropha* ZELL. are very wide, of similar shape as those in *Chilo phragmitellus* (HBN.), for example. Lamella subgenitalis wide. In *C. paludella* (HBN.) I found one sheet-like large signum. The investigation of bursa copulatrix of the single female of *C. aureliella* (F. R.) in my collection was not successful. On bursa copulatrix I found a strongly sclerotized sheet which did not, however, resemble a signum. The investigation of a greater number of females will solve this problem.

Calamotropha paludella (HÜBNER, 1823—1824)

[Pl. XLVII, fig. 5, pl. LVIII, fig. 6, pl. XCI, fig. 6]

Tinea paludella HÜBNER, 1823—1824, Samml. Eur. Schmett.: pl. 68, fig. 452 ♀, fig. 453 ♂.

Chilo paludella DUPONCHEL, Hist. Nat. Léop. France 10: 268, pl. 283, f. 2.

Crambus Paludellus HERRICH-SCHÄFFER, 1849, Syst. Bearb. Schmett. Eur. 4: 117.

Antennae brown to whitish. In male antennae serrate from below, in female setaceous. Palps, frons, head, thorax, and tegulae brown, greyish or whitish. Frons slightly convex, rounded. The length of the fore wing varies from 12 mm to 16 mm, width 4,8—6 mm. Fore wing in the female somewhat narrower than in the male. Costal margin delicately convex

or straight. Apex rather pointed. Outer margin straight. Fore wing in the basal part relatively wider than in the species of the related genera. Ground of the fore wing dull, dark brown to light greyish-brown, or whitish. The design of the fore wing either completely reduced or consisting of a dark spot situated in the place of the median cell and outer band. This band consists of dark dots. It is oblique in the upper part of the wing and above dorsal margin it runs almost vertically to the latter, being slightly bent toward the outer margin. Sometimes also two dark dots situated more or less above each other in the basal part of the wing. No dark dots on the outer margin. Cilia on the outer margin of the fore wing dull, similarly coloured as ground of wing. Hind wing snow white with darkened margins. Cilia either white or darkened white.

ab. *durandi* (LUCAS, 1931).

Crambus paludellus ab. *durandi* LUCAS, 1931, Bull. Soc. Ent. France: 95.

The specimens with fore wings, thorax and head white coloured. From Vendée (France).

Male genitalia [pl. XLVII, fig. 5]: uncus very well developed, straight, narrow, pointed. Gnathos twice shorter than uncus, also pointed. Saccus relatively wide. Valva trapezoidal, widely, bluntly truncate at the end. It is wholly somewhat more sclerotized than in the species of the related genera. The dorsal apical angle of valva more strongly sclerotized than the remaining part of valva. No pars basalis. Eventually a list-like dorsal thickening at the base of valva could be considered as pars basalis. Aedeagus with a vertical bend slightly narrowing at the end, unarmed. Cornuti appear as several fine prongs. They are grouped in one compact streak.

In the female genitalia [pl. LVIII, fig. 6] labia very wide, accreted at sides. Only the species of the genus *Calamotropha* ZELL. show this feature. Gonapophyses posteriores well developed, long, rather wide at the base, narrowed at the end. Lamella subgenitalis does not show a strong accretion to ostium bursae.

Gonapophyses anteriores wide, triangular at the base. Ostium bursae funnel-like, not much wider than ductus bursae, distinctly more sclerotized than the latter. The border between

ostium bursae and ductus bursae is not sharp. Ductus bursae not very long, without a loop. Bursa copulatrix transparent with one large sheet-like signum.

C. paludella (HBN.) is a species rather widely distributed in Europe. It is known also from Syria. In the Mediterranean basin it broods twice. In Central Europe it appears in July and August. The caterpillar feeds on dry leaves of *Typha latifolia* L.

Examined material:

Italia: 1 male: „Emilia Mezzolarr, 5 VI 1938, A. FIORI“, author's coll.

Hungary: 3 males: Vörs Com. Somogy Hungaria, 3 VII 1931, L. OSTHELDER leg., author's coll. 1 male and 1 female: „Izsák, SCHMIDT, 1912 VII 12“, author's coll.

Poland: 3 males and 1 female from Bielinek n/Odrą, VII, author's coll. 1 male: „Ligota Tworkowska pow. Rybnik, Górny Śląsk, 21 VII 1950, leg. DROZDA“, author's coll. 3 males from Kołc Tynieckie, distr. Kraków, 16 VII 1946, author's coll. 5 males: „Polonia mer. Rudze, distr. Oświęcim, VII 1950, leg. MIODOŃSKI“, author's coll. 1 male from Łańsk—Rybaki distr. Olsztyn 24 VII 1952, author's coll.

USSR: Several spec. from Western Podolia (Wołczków, Krzywece, Babińce, VII—VIII 1935—1936), coll. and leg. TOLL.

***Calamotropha aureliella* (FISCHER v. RÖSLERSTAMM, 1834)**

[Pl. XLVII, fig. 4, pl. LVIII, fig. 5, pl. XCI, fig. 8]

Chilo aureliellus FISCHER VON RÖSLERSTAMM, 1834, Abbild. Bericht. Schmett.: 261, pl. 89, fig. 1 a—e.

Antennae brownish, in male distinctly serrate, in female setaceous. Palps short, yellowish. Frons slightly convex, rounded, brownish-golden. Head yellowish. Patagia brownish on sides, white in the middle. Thorax and tegulae yellowish-golden, in female whitish. Length of the fore wing in male 9 mm, in female 13 mm, width in male 4,5 mm, in female 5 mm. Female distinctly larger and with relatively longer and narrower fore wings than male. Costal margin in male almost straight, in the female delicately convex. Apex in male rather rounded, in female pointed. Outer margin almost straight, very slightly oblique. Ground of the fore wing in male yellowish-white, in female silvery-white. In male two transversal bands in the shape of a narrow, brown-golden

lines. Outer band distinctly bent toward the outer margin in the upper part of the wing. One or two small black dots at the outer margin above the dorsal margin. No transversal bands in female. Cilia on the outer margin unicolour, in male golden with metallic lustre, in female lustrous white. Hind wings in male with slight lustre, greyish. In the upper part of the hind wing a group of protruding hairs shaped as a yellow spot. Cilia of the hind wings lustrous, whitish. Hind wings of female slightly lustrous, snow-white, with lustrous, similarly coloured cilia.

ab. *korbi* (CARADJA, 1910).

Crambus aureliellus ab. *korbi* CARADJA, 1910, Dtsch. ent. Zeit. Iris 24: 111.

The specimens with unicoloured golden fore wings, palps, antennae and patagia. The form described from Radde. I have several males from Hungary coloured thus.

ab. *approximella* (PREISSECKER, 1937).

Crambus aureliellus ab. *approximellus* PREISSECKER, 1937, Verh. Zool.-bot. Ges. 86/87: 419.

The form in which transversal bands of the fore wings are usually approaching each other. From Neu-Aigen.

Male genitalia [pl. XLVII, fig. 4]: uncus very long and narrow, twice longer than gnathos. It is ended with a small hook. Gnathos straight narrow. Tegumen relatively narrow, short. Saccus strongly developed, wide, almost as long as valva. Valva in the shape of a rectangular rhomb. It is bluntly, obliquely truncate at the end with short process in the ventral angle. In the basal part valva with ventral protuberance, and with list-like dorsal thickening. Aedeagus as long as the whole copulatory apparatus, with three strong cornuti of similar size. The length of cornuti corresponds to the greatest width of aedeagus. Aedeagus narrow, almost straight.

Female genitalia [pl. LVIII, fig. 5] large, 5 mm long. Labia accreted to each other. Gonapophyses posteriores very slender, long. Lamella subgenitalis very wide with long, very narrow gonapophyses anteriores. The accretion of lamella subgenitalis to ostium bursae weak. Ostium bursae wide,

strongly sclerotized, sharply bordered from ductus bursae. Ductus bursae transparent narrow at the beginning, then widened, passing without distinct border into bursa copulatrix. I found a strongly sclerotized object on bursa copulatrix but I do not know whether it was a signum. Unfortunately I have only one female of this species, and I cannot solve this problem at present.

C. aureliella (F. R.) is probably a Ponto-Mediterranean element; in Europe it is distributed in Southern France, Germany and Hungary. It is reported also from Asia (Radde).

Examined material:

Several males and one female from Hungary, author's coll.

BIBLIOGRAPHY¹

- ADAMCZEWSKI S. 1951. Notatki Lepidopterologiczne. II. Fragm. Faun. Mus. Zool. Pol., Warszawa, 6: 96—110.
- *AGENJO R. 1946. Catálogo ordenador de los Lepidópteros de España, Madrid, 1946.
- AGENJO R. 1947. Nueva especie pirenaica del género *Crambus* F. Eos, Madrid, 23: 7—15, 1 pl.
- AGENJO R. 1952. Un *Crambus* F., inédito y otro nuevo para España, descubiertos en los Picos de Europa. Eos, Madrid, 28: 315—322, pl. VII.
- AGENJO R. 1952. Faunula lepidopterológica almeriense. Madrid.
- AGENJO R. 1954. Otro nuevo *Crambus* F., español (*Lep. Cramb.*). Eos, Madrid, 30: 345—352, 1 pl.
- AMSEL H. G. 1926. Beiträge zur Wadecker Kleinschmetterling-Fauna. Dtsch. Ent. Zeit., Berlin, 1926: 295—304.
- AMSEL H. G. 1933. Die Lepidopteren Palästinas. Eine zoogeographisch-ökologisch — faunistische Studie. Zoogeographica, 2.
- AMSEL H. G. 1936. Zur Kenntnis der Kleinschmetterlingsfauna Sardiniens. Veröffentl. Deutsch. Kol. Mus., Bremen, 1, 3 Heft.
- AMSEL H. G. 1935. Weitere Mitteilungen über palästinische Lepidopteren. Veröffentl. Deutsch. Kol. Mus., Bremen, 1, 2 Heft.
- AMSEL H. G. 1940. Ueber alte und neue Kleinschmetterlinge aus dem Mittelmeer-Gebiete. Veröffentl. Deutsch. Kol. Mus., Bremen, 3: 37—56.
- AMSEL H. G. 1949. On the Microlepidoptera collected by E. P. WILTSHIRE in Irak und Iran in the years 1935 to 1938. Bull. Soc. Fouad 1er Ent. Le Caire, 33, 12 pls.

¹ The papers which I could not read are marked with an asterisk.

- AMSEL H. G. 1951. Ueber die Variabilität der männlichen Genitalarmatur bei einigen *Crambus*-Arten (*Pyralidae*). Zeit. Lepidopt., Krefeld **1**: 159—163, pl. VI.
- AMSEL H. G. 1952. Über einige von HAMPSON beschriebene paläarktische Pyraliden (*Lepidoptera*, *Pyralidae*). Mitt. Münch. Ent. Ges., München, **42**: 40—70.
- BAKER G. T. 1880. On the Species of European Crambi allied to *C. pinellus*. Ent. Monthly Mag., London, **19**: 239—244.
- BAKER G. T. 1833/1834. On the species of European Crambi more or less allied to *C. margaritellus*. Ent. Monthly Mag., London, **20**: 157—160.
- BILOSOV M. 1931. Materijali do lepidopterofauni Podillja. Trudy Prir. Techn. Widd. Wsenukr. Akad. Nauk, Kiev, **5**: 127—206.
- BLESZYŃSKI S. 1948. Materiały do znajomości fauny motyli Tatr polskich. Docum. Physiogr. Pol., Kraków **11**: 1—8.
- BLESZYŃSKI S. 1950. Fauna motyli Podgórek w okolicy Krakowa. Docum. Physiogr. Pol., Kraków, **21**: 1—52.
- BLESZYŃSKI S. 1950. Materiały do znajomości wachlarzykowatych (*Lepidoptera-Crambidae*). Część V. Drugie stanowisko gatunku *Crambus maculalis* ZETT. w Tatrach polskich. Bull. Ent. Pol., Wrocław, **20**: 94—96.
- BLESZYŃSKI S. 1951. Materiały do znajomości rodzaju *Crambus* F. (*Lepidoptera*, *Crambidae*). Część I. Bull. Ent. Pol., Wrocław, **21**: 61—101, pl. IV—XXIX.
- BLESZYŃSKI S. 1952. Materialien zur Kenntnis der Gattung *Crambus*: Teil IV. Ein neuer europäischer *Crambus* aus der Gruppe „*geniculeus* HAW.“. Zeit. Wien. Ent. Ges., Wien, **37**: 148—151, pl. XVI.
- BLESZYŃSKI S. 1952. Studies on the *Crambidae* Part VIII. Studies on the European species of the „*Pediasia fascelinella*“ HBN. — group. Bull. Ent. Pol., Wrocław, **22**: 140—169, pl. I—X.
- BLESZYŃSKI S. 1953. Studies on the *Crambidae* (*Lepidoptera*). VI. Three new Palearctic species of the genus *Pediasia* HBN. Ann. Mus. Zool. Pol., Warszawa, **15**: 101—108, pl. XV—XVI.
- BLESZYŃSKI S. 1954. Materiały do znajomości wachlarzykowatych (*Lepidoptera-Crambidae*). Część IV. Rozmieszczenie w Polsce niektórych gatunków spokrewnionych z *Crambus permutatellus* H.-S. Bull. Ent. Pol., Wrocław, **24**: 133—137.
- BLESZYŃSKI S. 1955. Materialien zur Kenntnis der *Crambidae*, Teil X. Über die systematische Stellung der *Crambus delicatellus* ZELL.-Gruppe. Zeit. Wien. Ent. Ges., Wien, **40**: 266—269, fig. 1—3.
- BLESZYŃSKI S. 1955. Materialien zur Kenntnis der *Crambidae*. Teil XI. Bemerkungen über *Agriphila dalmatinella* (HAMPSON). Zeit. Wien. Ent. Ges., Wien, **40**: 293—295, fig. 1—6.
- BLESZYŃSKI S. 1956. Materiały do znajomości wachlarzykowatych (*Lepidoptera-Crambidae*). Część II. *Crambus radiellus* HBN. *tatricellus* subsp. n. Bull. Ent. Pol., Wrocław, **25**: 125—126.
- BLESZYŃSKI S. 1956. Studies on the *Crambidae* (*Lepidoptera*). Part VIII.

- Notes on the *Pediasia persella* (TOLL). Bul. Ent. Pol., Wrocław, **25**: 161—164.
- BŁESZYŃSKI S. 1956. Studies on the *Crambidae* (Lepidoptera). Part IX. Notes on the Genus *Crambopsis* DE LATTIN. Bull. Ent. Pol., Wrocław, **25**: 227—231.
- BŁESZYŃSKI S. 1946. Studies on the *Crambidae* (Lepidoptera). Part XII. Three new Palaearctic species of the Generic Group *Crambus* FABR. s. l. Ann. Hist.-Nat. Mus. Nat. Hung. Budapest, **7**: 419—421.
- BŁESZYŃSKI S. 1956. Materialien zur Kenntnis der *Crambidae*. Teil XIII. Über die Gattung *Catoptria* HBN. und eine neue europäische Art aus dieser Gattung. Zeit. Wien. Ent. Ges., Wien, **41**: 213—218, pl. 21.
- BODENHEIMER F. S. 1930. Zur Kenntnis der Microlepidopterenfauna Palästinas. Dtsch. Ent. Zeit. Iris, Dresden, **44**.
- BRUNDIN L. 1931—1932. Insektenfaunan inom Abisko Nationalpark. K. Svenska Vet. Skr. Nat., Stockholm, **16**: 1—64, **17**: 1—68, **18**: 1—72.
- BURMANN K. 1947. *Crambus maculalis* ZETT. (Microlepidoptera, Pyralidae). Zeit. Wien. Ent. Ges., Wien, **32**: 69—75.
- BURMANN K. 1951. *Crambus luctiferellus* HB. and *luctuellus* H.S. — zwei gute Arten (Microlepidoptera-Pyralidae). Mitt. Münch. Ent. Ges., München, **41**: 137—147, pl. VIII.
- CARADJA A. 1910. Beitrag zur Kenntnis über die geographische Verbreitung der Pyraliden des europäischen Faunagebietes nebst Beschreibung einiger neuer Formen. Dtsch. Ent. Zeit. Iris, Dresden, **24**: 105—147.
- CARADJA A. 1916. Beitrag zur Kenntnis der geographischen Verbreitung der Pyraliden und Tortriciden des europäischen Faunagebietes, nebst Beschreibung neuer Formen. Dtsch. Ent. Zeit. Iris, Dresden, **30**: 1—88.
- CARADJA A. 1925. Zwei neue paläarktische *Crambus*-Arten und 2. einige Worte über wenig bekannte und neue *Oledeobia* Formen. Dtsch. Ent. Zeit. Iris, Dresden, **39**: 142—145.
- CARADJA A. 1926. Ueber Chinas Pyraliden, Tortriciden, Tineiden nebst kurze Betrachtungen, zu denen das Studium dieser Fauna Veranlassung gibt (eine biogeographische Skizze). Mem. Sect. Stiint. Acad. Rom. Ser. III, 1925: 257—373.
- CARADJA A. 1928. Ueber einige neue und schon bekannte Pyraliden und Tortriciden aus dem palaarktischen Faunagebiete. Dtsch. Ent. Zeit. Iris, Dresden, **42**: 287—294.
- CARADJA A. 1931. Dritter Beitrag zur Kenntnis der Pyraliden von Kwanhsien und Mokanshan (China). Bull. Acad. Roum., Bucarest **14**: 203—212.
- CARADJA A. 1931. Beiträge zur Lepidopterenfauna Grossrumäniens für das Jahr 1930. Mem. Sect. Stiint. Acad. Rom., Bucarest, (3), **7**, no. 8: 1—52, 2 figs.
- CARADJA A. 1932. Dritter Beitrag zur Kleinfalterfauna Chinas nebst kurzer Zusammenfassung der bisherigen biogeographischen Ergebnisse. Bull. Acad. Roum., Bucarest, **15**: 111—123.
- CARADJA A. 1935. Ex schwedisch-chinesische wissenschaftliche Expedition

- nach den nordwestlichen Provinzen Chinas. 22. *Lepidoptera*. 3. Familie: *Pyralidae*, *Pterophoridae*, *Tortricidae*, *Tineidae* l. s. Ark. Zool., Stockholm, 27 A, n. 8: 1—10.
- CARADJA A. 1939. Materialien zu einer Microlepidopterenfauna des Mien-shan Provinz Shansi, China. Dtsch. Ent. Zeit. Iris, Dresden, 1939, 53: 1—15.
- CARADJA A. 1939. Materialien zu einer Microlepidopterenfauna des Yangtsetales bei Batang. Dtsch. Ent. Zeit. Iris, Dresden, 53: 15—26.
- CARADJA A. & MEYRICK E. 1933—1934. Materialien zu einer Microlepidopteren Fauna Kwangtungs. Dtsch. Ent. Zeit. Iris, Dresden, 47: 123—144, 145—167, 48: 28—43.
- CARADJA A. & MEYRICK E. 1935. Materialien zu einer Microlepidopteren-Fauna der chinesischen Provinzen Kiangsu, Chekiang und Hunan. Berlin.
- CARADJA A. & MEYRICK E. 1936. Materialien zu einer Lepidopteren-Fauna des Taishan-Massivs Provinz Shantung. Dtsch. Ent. Zeit. Iris, Dresden, 50: 145—159.
- CARADJA A. & MEYRICK E. 1937. Materialien zu einer Microlepidopteren-Fauna des Yülings-Massivs (Prov. Yünnan). Dtsch. Ent. Zeit. Iris, Dresden, 51: 137—182.
- CHRÉTIEN P. 1917. Contribution à la connaissance des Lépidoptères du nord de l'Afrique. Notes biologiques et critiques. Ann. Soc. ent. France, Paris, 85: 369—503.
- CHRÉTIEN P. 1922. *Gallerinae*, *Crambinae*, etc., in OBERTHÜR. Les Lépidoptères du Maroc. Etudes Lép., Rennes, 19: 324—379.
- CHRISTOPH H. 1876. Sammelreise aus Nordpersien, Krasnowodsk in Turkmenien und dem Daghestan. Hor. Ent. Ros., St. Petersburg, 12: 181.
- CHRISTOPH P. 1885—1887. *Lepidoptera* aus dem Achal-Tekke-Gebiete. II. Teil. Mém. Lep. Rom., 2: 119—171, pl. VI—VIII, XV, 3: 50—125, pl. III—V.
- CHRISTOPH P. 1888. Diagnoses zu einigen neuen Lepidopteren des palearktischen Faunagebietes. Hor. Ent. Ross., St. Petersburg 22: 308—314.
- CONSTANT M. A. 1888. Notes sur quelques Lépidoptères nouveaux. 1-re partie. Ann. Soc. Ent. France ser. 6, 4: 201—216, pl. IX.
- COSTANTINI A. 1922. *Lepidoptera* pro fauna italica nova, additi specierum formarumque novarum descriptionibus. I. Neue Beitr. zur Syst. Insectenkunde, 2: 97—101.
- COSMO MELVILL J. 1889. *Crambus furcatellus* in Southerlandshire. Entomologist, 22: 236.
- COSTA A. 1885. Diagnosi di nuovi Artropodi della Sardegna (1). Bull. Soc. Ent. Ital. 17: 240—255.
- DENIS J. N. C. M. & SCHIFFERMÜLLER J. 1775. Systematischer Verzeichniss der Schmetterlinge der Vienergegend herausgegeben von einigen Lehrern. Wien.
- MC. DONNOUGH J. 1939. Check List of the *Lepidoptera* of Canada and the United States of America. Part II. *Microlepidoptera*. Mem. South. Calif. Acad. Sc. 2, no. 2.

- DONOVAN E. 1799. The Natural History of British Insects, Vol. 7. London, 7: 1—94, pl. CCLIII—CCLXXXVIII.
- DRENOWSKI A. K. 1925. Die vertikale Verteilung der Lepidopteren in den Hochgebirgen Bulgariens. Dtsch. Ent. Zeit., Berlin, 1925: 29—75, 97—125, 2 pls., 1 map.
- DRENOWSKI A. K. 1933. Ueber Lepidopteren-Zonen auf dem Alibotuschgebirge (in Bulgarische Mazedonien). Sofia.
- DUFRAINE A. 1942—1944. Microlépidoptères de la faune Belge (1-re—4-me note). Bull. Mus. Hist. Nat. Belg. Brussels, 1942, no. 5: 1—12; no. 40: 1—12; 1943, no. 31: 1—8, 1944, no. 18: 1—12.
- DUPONCHIEL P. A. J. 1836. Histoire Naturelle des Lépidoptères ou Papillons de France, Paris, 10.
- ERFURTH P. 1933. Neue Micro-Arten für Niederösterreich. Zeit. Österr. Ent.-Ver., 18: 46—47.
- EVERS H. 1947. Beiträge zur Microlepidopterenfauna von Sylt. Bombus, 1947: 169—172.
- *EVERSMANN E. 1844. Fauna Lepidopterologica Volgo-Uralensis. Casani.
- FABRICIUS J. C. 1781. Species Insectorum. II. Hamburgi et Kilonii.
- FABRICIUS J. G. 1787. Mantissa Insectorum sistens eorum species nuper detectas adiectis characteribus genericis, differentiis specificis, emendationibus, observationibus. Hafniae.
- FABRICIUS J. C. 1794. Entomologia Systematica emendata et auctata. III. Pars. II. Hafniae.
- FABRICIUS J. C. 1798. Supplementum Entomologiae Systematicae. Hafniae.
- FERNALD A. M. 1896. The *Crambidae* of North America. Massachusetts.
- FILIPJEV N. 1927. Microheterocera des Minussinsk Bezirks. Nachtrag II. Jahrb. Martj. Staatsmus. Minussinsk, 5: 1—32.
- FILIPJEV N. 1935. Notices Lépidoptérologiques. Lambillionea, 35: 23—28, figs.
- FISCHER E. v. RÖSSLERSTAMM J. E. 1834. Abbildungen zur Beschreibung und Ergänzung der Schmetterlingskunde besonders Microlepidopterologie als Supplement zu TREITSCHKE's und HÜBNER's europäischen Schmetterlinge, mit erläuterndem Text. Leipzig.
- FREY H. 1880. Die Lepidopteren der Schweiz. Leipzig.
- FUCHS A. 1903. Alte und neue Kleinfalter der Europäischen Fauna. Stett. Ent. Ztg., Stettin, 64: 232—233.
- GALVAGNI E. 1909. Die zoologische Reise des Naturwissenschaftlichen Vereines nach Dalmatien im April 1906. B. Spezieller Teil. Bearb. des gesammelten Materiales. 13. *Lepidoptera*. Wien. Mitt. Natur. Ver. Univ., 7: 104—173, 177—244, 245—254.
- GALVAGNI E. 1903. Zwei für Oesterreich neue Microheteroceren. Verh. Zool.-bot. Ges., Wien, 53: 570.
- GALVAGNI E. 1920. Einige Mitteilungen über neue Formen heimischer Microheteroceren. Verh. Zool.-bot. Ges., Wien, 70: 53—55, 4 figs.
- GERMAR & ZINCKEN. 1813—1821. Magazin der Entomologie, Halle, 1813—1821.

- GOZMÁNY L. 1952. A magyarországi motylepkék rendszertani jegyzéke. *Folia Ent. Hung.* **5**: 161—193.
- GUENÉE A. 1845. *Europaeorum Microlepidopterorum Index Methodicus*. Paris.
- HAMPSON G. F. 1895. On the classification of the *Schoenobiinae* and *Crambinae*, two Subfamilies of Moths, of the Family *Pyralidae*. *Proc. Zool. Soc. London*, 1895: 897—974, figs.
- HAMPSON G. F. 1900: New Palaearctic *Pyralidae*. *Trans. Ent. Soc. London*, 1900: 369—401, 1 pl.
- HARTIG F. 1953. Due nuove specie di *Crambus* (Lep. *Pyralid*). *Boll. Ass. Rom. Ent.*, Roma, **8**: 14—17, Figs. 1—6.
- *HAWORTH A. H. 1911. *Lepidoptera Britannica*. III. London.
- HEINEMANN H. 1865. *Die Schmetterlinge Deutschlands und der Schweiz*. II. Abt. Kleinschmetterlinge. Band. I. Heft II. Die Zünler. Braunschweig.
- HELLER C. 1881. Ueber die Verbreitung der Tierwelt im Tiroler Hochgebirge. *Sitzber. Akad. Wiss. Math.-nat. Cl.*, Wien, **58**: 103—175.
- HEMMING F. 1937. HÜBNER: A Bibliographical and Systematic Account of the Entomological Works of J. HÜBNER and the Supplements thereto, by C. GEYER, G. F. von FRÖLICH, and G. A. W. HERRICH-SCHÄFFER, & c. 2 vol. London.
- HERRICH-SCHÄFFER G. A. W. 1843—1856. Systematische Bearbeitung der Schmetterlinge von Europe zugleich als Text, Revision und Supplement, zu JAKOB HÜBNER's Sammlung Europäischer Schmetterlinge. Vol. IV, VI. Regensburg.
- HEYDMANN F. 1943. Die Bedeutung der sogenannten Dualspecies (Zwillingarten) für unsere Kenntnis der Art- und Rassenbildung bei Lepidopteren. *Stett. Ent. Ztg.*, Szczecin, **104**: 116—142.
- HODGINSON J. B. 1883/1884. Note on *Crambus furcatellus*. *Ent. Monthly Mag.* **20**: 189.
- HÜBNER J. 1785. Abbildungen und Beschreibungen noch nicht abgebildeter und nicht unbeschriebener Schmetterlinge, mit illuminirten Kupfern. Augsburg.
- HÜBNER J. 1787. Beiträge zur Geschichte der Schmetterlinge. Band I — Theil II. Augsburg.
- HÜBNER J. 1793. Sammlung auserlesener Vögel und Schmetterlinge, mit ihren Namen herausgegeben auf Hundert nach der Natur ausgemalten Kupfern. Augsburg.
- HÜBNER J. 1796—[1836]. Sammlung europäischer Schmetterlinge. Horde VIII. Tineae-Schaben. Augsburg.
- HÜBNER J. 1816—[1826]. Verzeichniss bekannter Schmettlinge [sic!]. Augsburg.
- ILLIGER J. K. W. 1801. Systematisches Verzeichniss von der Schmetterlingen der Wiener Gegend. II Band. Braunschweig.
- JOANNIS J. DE. 1915. Étude synonymique des espèces de Microlépidoptères décrites comme nouvelles par DUPONCHEL. *Ann. Soc. ent. France*, Paris, **84**: 62—164.

- JOANNIS J. de 1915. Remarque au sujet de la date de l'une des planches de HÜBNER. Bull. Soc. ent. France, Paris, 1915: 122—124.
- JOANNIS J. de 1932. Clefs ou tables analytiques des genres de *Crambidae* (*Pyralidae*) de France et de Belgique. Amat. Papill., Paris, 6: 6—24, figs.
- JOANNIS L. DE & RAGONOT E.-L. 1888. Descriptions de genres nouveaux et espèces nouvelles de Lépidoptères. Ann. Soc. ent. France, Paris, ser. 6, 8: 271—284, pl. VI.
- KALCHBERG A. 1897. Ueber die Lepidopteren-Fauna von Haifa in Syrien. Dtsch. Ent. Zeit. Iris, Dresden, 10: 161—190.
- KAUTZ H. 1930. Microlepidopteren aus Corsica (eine Zusammenstellung). Verh. Zool.-bot. Ges. Wien, 80: [24]—[31].
- KLEMENSIEWICZ S. 1898. O nowych i mało znanych gatunkach motyli fauny galicyjskiej. Spr. Kom. Fizjogr. PAU, Kraków, 33: 113—190.
- KLIMESCH J. 1942. Über Microlepidopteren-Ausbeuten aus der Gegend von Zaton bei Gravosa (Süddalmatien). Mitt. Münch. ent. Ges., München, 32: 347—399.
- KLIMESCH J. 1943. *Crambus languidellus* Z. in Nordsteiermark (*Lep., Pyralidae*). Zeit. Wien. Ent. Ges., Wien, 28: 30—31.
- KLOET S. G. & HINCKS W. D. 1945. A Check List of British Insect. Stockport.
- KRONE W. 1910. Neubeschreibungen einiger Arten und Varietäten von Microlepidoptera. Jahr. Ber. Entom. Ver., Wien, 21: 39—42.
- KRULIKOVSKIJ J. 1909. Die Lepidopteren des Gouv. Vjatka. Mater. faun. flor. Ross. 9.
- LATTIN G. DE. 1951. Ein neuer deutscher *Crambus*: *C. osthelderi* n. sp. (*Lep.*). Ent. Zeit., Stuttgart, 60: 73—76, fig.
- LATTIN G. DE. 1951. Türkische *Lepidoptera* II. Rev. Fac. Sc. Univ. D'Istanbul s. B, 16: 45—72.
- LATTIN G. DE. 1951. Studien über die Gattung *Crambus* F. I. Über *Cr. myellus* HB. und ihm nächst verwandten Arten. Zeit. Wien. Ent. Ges., Wien, 36: 89—101, 1 pl.
- LATTIN G. DE. 1952. Studien über die Gattung *Crambus* F. II. über die Gattungszugehörigkeit des „*Crambus*“ *malacellus* DUP. Ent. Zeit., Stuttgart, 62: 89—91, fig.
- LEDERER J. 1853. Lepidopterologisches aus Sibirien. Verh. Zool.-bot. Ver., Wien, 3: 351—386, pls. I—VII.
- LEDERER J. 1855. Weiterer Beitrag zur Schmetterlings-Fauna des Altai-Gebirges in Sibirien. Verh. Zool.-bot. Ver., Wien, 5: 97—120.
- LEDERER J. 1855. Beitrag zur Schmetterlings-Fauna von Cypem, Beirut und einem Theile Klein-Asiens. Verh. Zool.-bot. Ver., Wien, 5: 177—234, 5 pls.
- LEDERER J. 1869/1870. Contributions à la Faune des Lépidoptères de la Transcaucasie. Ann. Soc. ent. France, Paris, 12: 17—54. Pl. I—II.
- LEECH J. H. 1886. British Pyralidides, including *Pterophoridae*. London.
- LEECH J. H. 1901. *Lepidoptera Heterocera* from China, Japan und Corea. Part V. With descriptions of new species by RICHARD SOUTCH. Trans. Ent. Soc., London, 1901: 385—514, 2 pls.

- LHOMME L. 1935. Catalogue des Lépidoptères de France et de Belgique. Vol. II, fasc. I.
- LHOMME L. 1938/1944. Nouvelles stations francaises de *Crambus* FAB. Rev. Franç. Léop. 9: 154—155.
- LINNAEUS C. 1758. Systema Naturae...Editio decima. Reformata. Tomus I. Holmiae.
- LINNAEUS C. 1761. Fauna Svecica,... Editio altera. Stockholmiae.
- LINNAEUS C. 1767. Systema Naturae. Edition duodecima. Tomus I. Pars II. Holmiae.
- LUCAS D. 1931. Espèces et formes nouvelles de Lépidoptères. Bull. Soc. ent. France, Paris, 36: 95—96.
- LUCAS D. 1932. Lépidoptères nouveaux de l'Afrique du Nord. Bull. Soc. ent. France, Paris, 37: 185—187.
- MANN J. 1871. Beitrag zur Kenntniss der Lepidopteren-Fauna des Glockner-Gebietes nebst Beschreibung drei neuen Arten. Verh. Zool.-bot. Ges., Wien, 21: 69—82.
- MARIANI M. 1939. Fauna Lepidopterorum Siciliae (Catalogo Regionato). Mem. Soc. Ent. Italiana, Genova.
- MARIANI M. 1941/1942. Fauna Lepidopterorum Italiae. Giorn. Sc. Nat. Econ. Palermo, 42, Mem. n. 3.
- MARION H. 1949. Contribution à l'étude des *Crambus* paléarétiques. I. *Crambus digitellus*. H.-S. Rev. franç. Léop., 12: 125—128.
- MARION H. 1950. Contribution à l'étude des *Crambus* paléarétiques. II. *Crambus craterellus* Sc. et *cassentiniellus* Z. Rev. franç. Léop., 12: 236—240, 1 p.
- MARION H. 1950. Contribution à l'étude des *Crambus* paléarétiques. III. Le groupe *Craterellus* en Europe occidentale et en Afrique du Nord. Rev. franç. Léop., 12: 261—277, 1 pl.
- MARION H. 1952. *Crambus salinellus ludovicellus* nova subspecies. Mitt. Münch. Ent. Ges., München, 42: 154—157, 3 figs.
- MARTINI W. 1916. Verzeichniss Thüringer Falter aus den Familien *Pyralidae*-*Micropterygidae*. Dtsch. Ent. Zeit. Iris, Dresden, 30: 110—186.
- MEYRICK E. 1883/1884. *Crambus ramosellus*: change of nomenclature. Ent. Monthly Mag., London, 20: 141.
- MEYRICK E. 1928. A Revised Handbook of British *Lepidoptera*. London.
- *MÜLLER-RUTZ J. 1920. Aus der Welt der Kleinschmetterlinge. Mitt. Ent., Zürich, 5: 334—349, 1 pl.
- MÜLLER-RUTZ J. 1924. *Crambus perlellus* Sc. und *Cr. rostellus* LAH. Schweiz. Ent. Anz., 1924, n. 4.
- MÜLLER-RUTZ J. 1929. Zur Artberechtigung einiger Pyraliden und Tortricidenformen. Mitt. schweiz. ent. Ges., Bern, 14: 125—132, 2 pls.
- MÜLLER-RUTZ J. 1931. Über einige alte und neue Crambusarten. Mitt. schweiz. ent. Ges., Bern, 15: 28—39, 1 pl.
- MÜLLER-RUTZ J. 1933. Ueber *Crambus radiellus* Hb., *tristrigellus* RAG., *intermediellus* M.-R. und eine neue Art aus den Pyräneen. Mitt. schweiz. ent. Ges., Bern, 15: 457—462.
- NEAVE S. A. 1939—1940. Nomenclator Zoologicus. A List of the Names

- of Genera and Subgenera in Zoology from the tenth Edition of Linneus 1758 to the End of 1935. Vol. I—IV.
- OBRAZTSOV N. 1954. Zur Nomenklatur von *Crambus cassentiniellus* Z. (*Lepidoptera, Pyralidae*). Zeit. Wien. ent. Ges. **39**: 154—257.
- OSTHELDER L. 1939. Die Schmetterlinge Südbayerns und der angrenzenden nördlichen Kalkalpen. II. Teil. Die Kleinschmetterlinge. Mitt. Münch. Ent. Ges., München, **29**: 1—112, pl. I—II.
- OSTHELDER L. 1941. Beitrag zur Kleinschmetterlingsfauna Kretas. Mitt. Münch. Ent. Ges., München, **31**: 365—370.
- OSTHELDER L. 1951. Beiträge zur Lepidopterenfauna Mazedoniens. Veröffentlichl. Zool. Staatssamml. München, **2**: 1—78.
- OSTHELDER L. 1952. Ein Beitrag zur Variationsbreite von *Crambus margaritellus* Hb. (*Lep.*). Nachr. Bl. bayr. Ent. **1**: 10—13.
- PETERSEN W. 1924. Lepidopteren-Fauna von Estland (Eesti). I/II. Tallin-Reval.
- PETERSEN W. 1925. Die Gattung *Crambus* F. (*Lepidopt.*). Ein Beitrag zur Orthogenese. Verh. III Internat. Ent. Kongres Zürich: 403—413, 2 pls.
- PHILPOTT A. 1929. Descriptions of new species of *Lepidoptera*. Trans. N. Zeal. Inst., Wellington, **60**: 491—514, 68 figs.
- PIERCE F. N. & METCALFE J. W. 1938. The Genitalia of the British Pyrales with Deltoids and Plumes. Oundle, Northants.
- RAGONOT L. A. 1875. Microlépidoptères nouveaux et peu connus. Bull. Soc. ent. France, Paris, 1875: LXXXI.
- RAGONOT L. A. 1887. Diagnoses suivantes de diverses espèces inédites de Microlépidoptères provenant de Gabès (Tunisie) récoltées par notre collègue M. le Capitaine CH. DATTIN. Bull. Soc. ent. France, Paris, 1887: 138—139.
- PREISSECKER F. 1937. Ausführungen über bemerkenswerte niederösterreichische Falter. Verh. Zool.-bot. Ges., Wien, **86/87**: 418—420.
- REBEL H. 1891. Beitrag zur Microlepidopteren Dalmatiens. Verh. Zool.-bot. Ges., Wien, 1891: 610—639.
- REBEL H. 1893. Neue oder wenig gekannte Microlepidopteren des palaarktischen Faunagebietes. Stett. Ent. Zeit., Stettin, **54**: 37—59.
- REBEL H. 1901. Catalog der Lepidopteren des palaarktischen Faunagebietes. II. Theil. Familien *Pyralidae-Micropterygidae*. Berlin.
- REBEL H. 1904. Sistematski Spisak *Lepidoptera* (Leirova) Bosne i Hercegovine. Glasn. Zeml. Muz. Bosni i Herz., **16**: 275—416.
- REBEL H. 1905. Lepidopteren aus dem Gebiete des Triglav und der Crna Prst in Krain. Jahr. Ber. Wien. Ent. Ver., Wien, **16**: 16—21.
- REBEL H. 1907. Neue palaarktische Microheteroceren. Dtsch. Ent. Zeit. Iris, Dresden, **19**.
- REBEL H. 1907. Lepidopteren aus dem Gebiete des Triglav und der Crna Prst in Krain. II. Nachtrag. Jahr. Ber. Wien. Ent. Ver., Wien, **18**: 22.
- REBEL H. 1908. Lepidopteren aus Tripolis und Barka. Zool. Jahrbüchern. Abt. Syst. Geogr. Biol. Tiere, **27**: 273—290.

- REBEL H. 1910. Neue Pyraliden, Tortriciden und Tineen. Dtsch. Ent. Zeit. Iris, Dresden, **24**: 1—14, 1 pl.
- REBEL H. 1916. Beiträge zur Lepidopterenfauna Ungarns. IX, X. Rov. Lap., Budapest, **23**: 41—43.
- REBEL H. 1916. Ueber die Microlepidopteren aus dem östlichen Tannuola-Gebiet. Dtsch. Ent. Zeit. Iris, Dresden, **30**: 186—195.
- REBEL H. 1918. *Lepidoptera* aus Mittelalbanien. Zeit. Österr. Ent. Ver., Wien, **3**.
- REBEL H. 1930. Über eine Lepidopterenausbeute von den Pityusen. Verh. Zool.-bot. Ges., Wien, **80**: [1]—[5].
- REUTTI C. 1898. Uebersicht der Lepidopteren-Fauna des Grossherzogtums Baden. Berlin.
- ROMANOFF N. M. 1887. Les Lépidoptères de la Transcaucasie. 3 Partie. Mém. Lép. Rom. **3**: 1—49, pl. I—II.
- ROTSCHILD H. N. C. 1911. Some species of Crambi, with descriptions of two new ones. Entomologist, London, **44**: 49—51, pl. I.
- ROTSCHILD H. N. C. 1914. Adatok Magyarország lepkefaunájához. Rov. Lap., Budapest, **21**: 27—53.
- SCHAWERDA K. 1908. Zur Lepidopterenfauna Bosniens und der Herzegovina. Verh. Zool.-bot. Ges., Wien, **58**: 250—256.
- SCHAWERDA K. 1913. Siebenter Nachtrag zur Lepidopterenfauna Bosniens und der Herzegovina. Verh. Zool.-bot. Ges., Wien, **63**: 141—178.
- SCHAWERDA K. 1921. Beiträge zur Lepidopteren-Fauna der Kroatischen Küste und Neubeschreibungen. Dtsch. Ent. Zeit. Iris, Dresden, **35**: 111—138.
- SCHAWERDA K. 1937. Zwei neue Microheteroceren aus Mazedonien. Zeit. Öst. Ent. Ver., Wien, **22**: 55—56.
- SCHMIDT A. 1910. Ueber eine neue *Crambidae* aus Ungarn. Arch. Zool., Budapest, **1**: 31—32.
- SCHMIDT A. 1930. Zwei neue palearktische *Crambus*-Arten (*Pyralidae*). Intern. Ent. Zeit. **24**: 309—312, 1 pl., 2 figs.
- SCHMIDT A. 1933/1934. Neue spanische Microlepidopteren. Boll. Soc. Esp. Hist. Nat. **33**: 397—405, 1 pl., 1 fig.
- SCHRANK F. P. 1802. Fauna Boica. Durchgedachte Geschichte der in Baiern einheimischen und zahmen Tiere. II. Band, II. Abt. Ingoldschadt.
- SCHWINGENSCHUSS L. 1930. Lepidopterologische Ergebnisse einer Herbstreise nach Andalusien. Verh. Zool.-bot. Ges., Wien, **80**: 1—31.
- SCOPOLI I. A. 1763. Entomologia Carniolica exhibens Insecta Carnioliae indigena et distributa in ordines, genera, species, varietates. Methodo Linneana. Vindobonae.
- SKALA H. 1912. Die Lepidopterenfauna Mährens. II. Teil. Verh. Natf. Ver., Brünn, **51**: 115—377.
- SNELLEN P. C. T. 1882. De Vlinders van Nederland. *Microlepidoptera* I. Leiden.
- SOFFNER 1925. *Crambus truncatellus* in Bohemia. Dtsch. Ent. Zeit. Iris, Dresden, **39**: 309.

- SOWINSKI W. W. 1935. Wogniwki (*Lepidoptera-Pyralidae*) Kijevścini. Zbirnik Prac Zool. Mus., Kiev, **15**: 46—139.
- SPULER A. 1910. Die Schmetterlinge Europas. II Band. Stuttgart.
- STACH S. 1936. Microlepidoptera Tatr polskich. Spraw. Kom. Fizjogr. PAU, Kraków, **70**: 187—221.
- STANTON H. T. 1849. Systematic Catalogue of the British *Tineidae* and *Pterophoridae*. London.
- STANTON H. T. 1851. Supplementary Catalogue of the British *Tineidae* and *Pterophoridae*, London.
- STAUDINGER O. 1859. Diagnosen nebst kurzer Beschreibungen neuer andalusischer Lepidopteren. Ent. Zeit. Stettin, **20**: 211—259.
- STAUDINGER O. 1881. Lepidopteren-Fauna Kleinasien's. Fortsetzung. Nachträge. Hor. Ent. Ross., St. Petersburg **16**: 65—135.
- STAUDINGER O. 1899. Neue Lepidopteren des palearktischen Faunagebietes. Dtsch. Ent. Zeit. Iris, Dresden, **12**: 352—403.
- STEPHENS J. P. 1834. Illustrations of British Entomology or a Synopsis of Indigenous Insects containing their generic and specific distinctions. Haustelata vol. IV. London.
- STERNECK J. & ZIMMERMANN F. 1933. Prodrum der Schmetterlingsfauna Böhmens. II Teil: *Microlepidoptera*. Karlsbad.
- STRAND E. 1902. Beitrag zur Schmetterlings-Fauna Norwegens. 2. Nyt. Mag. Naturv., Kristiania **40**: 135—192.
- STRAND E. 1904. Beitrag zur Schmetterlingsfauna Norwegens. III. Nyt. Mag. Naturv., Kristiania, **42**.
- STRAND E. 1917. Ueber W. HORNS litauische entomologische Kriegsausbeute 1916 (besonders *Trichoptera*, *Ephemeroptera*, *Lepidoptera* und *Hymenoptera*). Ent. Mitt., Berlin, **6**: 289—316.
- STRAND E. 1919. Neue Beiträge zur Arthropoden-Fauna Norwegens nebst gelegentlichen Bemerkungen über deutsche Arten. XXII—XXVI. Nyt. Mag. Naturv., Kristiania, **56**.
- *STRAND E. 1920. Beiträge zur Lepidopterenfauna Norwegens und Deutschlands. Arch. Naturg. 85 Abt. A Heft 4 [1919]: 1—82.
- SZENT-IVÁNY J. & UHRIK-MÉSZÁROS T. 1942. A *Pyralididae*-család (*Lepid.*) elterjedése a Kárpáti medencében. Ann. Hist.-nat. Mus. Nat. Hung. Pars Zool., **25**: 109—196, 1 pl.
- *THUNBERG 1794. Dissertatio Entomologica sistens Insecta Suecica, quorum partem primam etc. publico examini subiicit Joh. Borgstrom. VII. Uppsala.
- TOLL S. 1938. Microlepidopteren-Studien. Ann. Mus. Zool. Pol., Warszawa, **13**: 205—212, pl. XII—XIV.
- TOLL S. 1938. *Microlepidoptera* zebrane w latach 1934—1937 w powiatach zaleszczyckim i borszczowskim na Podolu. Spraw. Kom. Fizjogr. PAU, Kraków, **72**: 133—221.
- TOLL S. 1942. Neue Microlepidopteren. Zeit. Wien. Ent. Ver., Wien, **27**: 166—173.
- TOLL S. 1947. Beitrag zur Mikrolepidopterenfauna von Nord-Persien. Zeit. Wien. Ent. Ver., Wien, **32**: 107—116.

- TREITSCHKE F. 1832. Die Schmetterlinge von Europa (Fortsetzung des OCHSENHEIMER'SCHEN Werks). Band IX, 1 Abt. Leipzig.
- TURATI E. Lepidotteri del Museo Zoologios della R. Università di Napoli descrizione di forme nuove e note critiche. Ann. Mus. Zool., Napoli, 3, nò. 18: 1—31.
- TURATI E. 1911. Lépidoptères nouveaux ou peu connus. Bull. Soc. ent. France, Paris, 1911: 287—296.
- TURATI E. 1913. New species and new forms of *Lepidoptera* from Sardinia (concluded). Entom. Rec., London, 23: 16—18.
- TURATI E. 1919. A 1000 metri sull'Apennino modenese. Note di Lepidotterologia e discrizione di tre nuove specie di micri. Atti. Soc. Ital., Milano, 58: 147—187.
- TURATI E. 1922. Il *Crambus graphellus* CONST. in Italia. Mem. Soc. ent. ital., Genoa, 1: 8—12, 1 pl.
- TUTT J. W. 1886. Descriptions of *Crambus cantiellus* mihi a *Crambus* new to science. Entomologist, London, 19: 52—54, fig.
- TUTT J. W. 1887. The *Crambus contaminellus* discussion: with description of *Crambus salinellus*, mihi. Entomologist, London, 20: 52—57.
- VORBRODT C. 1928. Die Schmetterlinge Zermatt. Dtsche. Ent. Zeit. Iris, Dresden, 42: 7—130.
- WAHLGREN E. 1915. Svensk insektfauna. 10. *Lepidoptera*. 2. *Microlepidoptera*. 1 Mottfjarilar. *Pyralidina*. Ent. Tidskr., Uppsala, 36: 97—181, 4 pls.
- WALKER F. 1863. List of the specimens of Lepidopterous insects in the collection of the British Museum. Part XXVI. Crambites & Tortricites. London.
- WEHRLI E. 1924. Nice-St. Martin Vésubie-Digne. Ein Beitrag zur Lepidopterenfauna der Alpes Maritimes und der Basses Alpes. Dtsch. Ent. Zeit. Iris, Dresden, 38: 50—57, 59—98, 1 pl.
- ZELLER P. C. 1847. Bemerkungen zu einigen für Schlesien neuen Falterspecies. Bemerkungen über die auf einer Reise nach Italien und Sicilien beobachteten Schmetterlings-Arten. Isis, 1847.
- ZELLER P. C. 1849. Verzeichniss der von Herrn Jos. MANN beobachteten Toscanischen Microlepidoptera. Ent. Zeit., Stettin, 10: 312—317.
- ZELLER P. C. 1863. Chilonidarum et Crambidarum genera et species. Bero-linensis.
- ZERNY H. 1914. Ueber paläarktischen Pyraliden des K. K. naturhistorischen Hofmuseums in Wien. Ann. K. K. Naturhist. Hofmus. Wien, 28.
- ZERNY H. 1927. Die Lepidopteren-Fauna von Algeciras und Gibraltar in Süd-Andalusien. Dtsch. Ent. Zeit. Iris, Dresden, 41: 83—146.
- ZERNY H. 1935. Die Lepidopterenfauna des grossen Atlas in Marokko und seiner Randgebiete. Mem. Soc. Sci. nat. Maroc, 42.
- ZERNY H. 1939. Microlepidoptera aus dem Elburs-Gebirge in Nord-Iran. Zeit. Öst. Ent. Ver. 24.
- ZERNY H. 1943. Eine Falterausbeute aus Sizilien. II. Teil Mikrolepidopteren. Zeit. Wien. Ent. Ges., 28: 135—140.
- ZETTERSTEDT J. W. 1840. Insecta Lapponica. Lipsiae.

STRESZCZENIE

Autor zrewidował całość europejskich przedstawicieli rodzaju *Crambus* F. s. l. W rezultacie podział systematyczny tej grupy uległ dużej przebudowie. *Crambus* F. s. l. został podzielony na 12 samodzielnych rodzajów. Jako rodzaje nowe zostały opisane: *Chrysocrambus* gen. n., z typem rodzajowym *Crambus cassentiniellus* ZELL., *Metacrambus* gen. n. z typem rodzajowym *Crambus carectellus* ZELL., *Mesocrambus* gen. n. z typem rodzajowym *Crambus candiellus* H.-S., oraz *Neocrambus* gen. n. z typem rodzajowym *Crambus wolfschlägeri* SCHAW. Z nowych gatunków został opisany *Catoptria pseudociliciella* sp. n. z Kaukazu. Gatunek ten zbliżony jest najbardziej do *Catoptria ciliciella* (REBEL). Z nowych podgatunków autor opisał alpejską formę *Agriphila biarmica* (TNGSTR.) jako *Agriphila biarmica alpina* subsp. n.

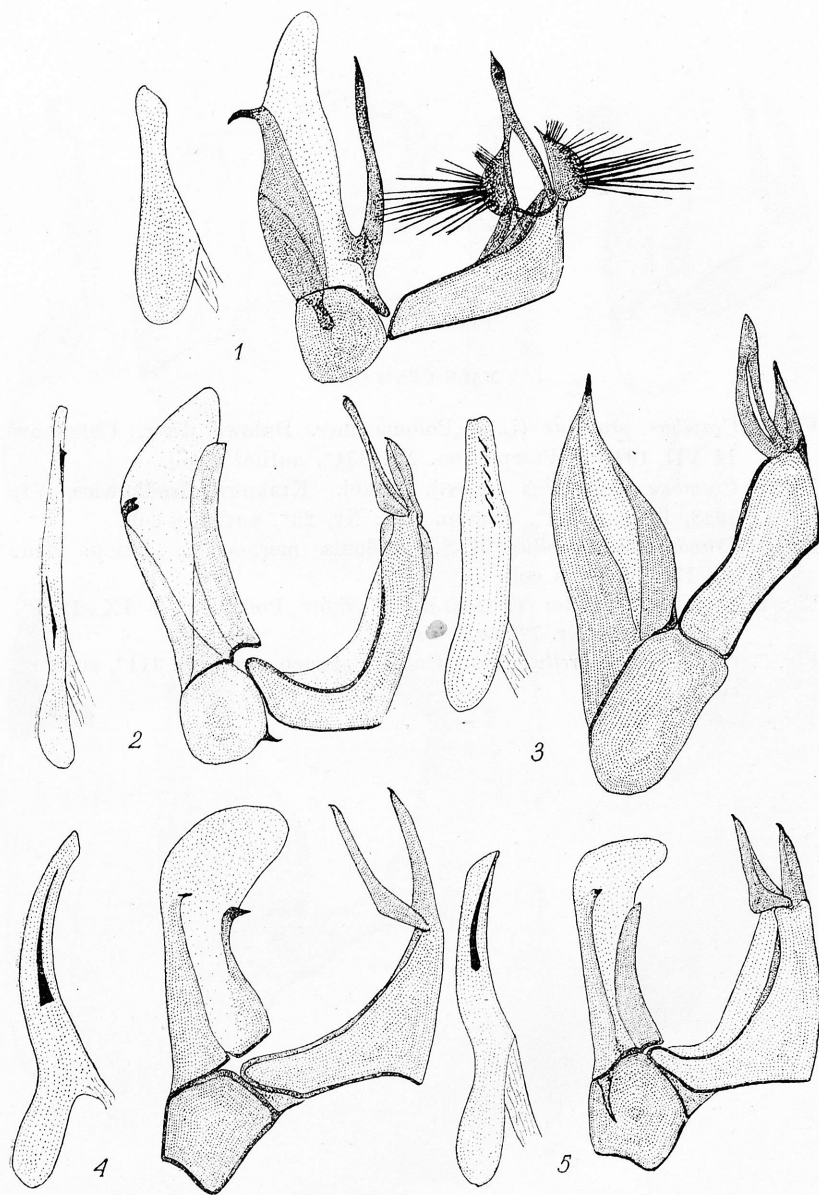
РЕЗЮМЕ

Автор провел ревизию всех европейских видов рода *Crambus* F. s. l. На основании этих исследований систематическое распределение видов этой группы сильно изменилось. Род *Crambus* F. s. l. автор разбил на 12 самостоятельных родов, описывая при этом четыре новых родов: *Chrysocrambus* gen. n. с родовым типом *Crambus cassentiniellus* ZELL., *Metacrambus* gen. n. с родовым типом *Crambus carectellus* ZELL., *Mesocrambus* gen. n. с родовым типом *Crambus candiellus* H.-S. и *Neocrambus* gen. n. с родовым типом *Crambus wolfschlägeri* SCHAW. Из новых видов описан один: *Catoptria pseudociliciella* sp. n. из Кавказа. Этот вид очень близок к *Catoptria ciliciella* (REBEL). Автор описал также альпийскую форму *Agriphila biarmica* (TNGSTR.) и назвал ее *Agriphila biarmica alpina* subsp. n.

Plate XXVII

MALE GENITALIA

- Fig. 1. *Crambus pascuellus* (L.). „Polonia mer. Gubałówka 1100 m, 29 VI 1946, BLESZYŃSKI“, „Praep. Gen. Nr. 27“, author's coll.
- Fig. 2. *Crambus uliginosellus* ZELL. „Katowice, 11 VI 1947, BLESZYŃSKI“, „Praep. Gen. Nr. 93“, author's coll.
- Fig. 3. *Crambus silvellus* (HBN.). „Podgórk k/Krakowa, 13 VIII 1948, BLESZYŃSKI“, „Praep. Gen. Nr. 111“, author's coll.
- Fig. 4. *Crambus ericellus* (HBN.). „Sudety“, „Praep. Gen. Nr. 26“, author's coll.
- Fig. 5. *Crambus alienellus* (GERM. & ZINCK.) „Podezerwone distr. Nowy Targ (Polonia mer.) 600 m, VII 1949 leg. BLESZYŃSKI“, „Praep. Gen. Nr. 14“, author's coll.

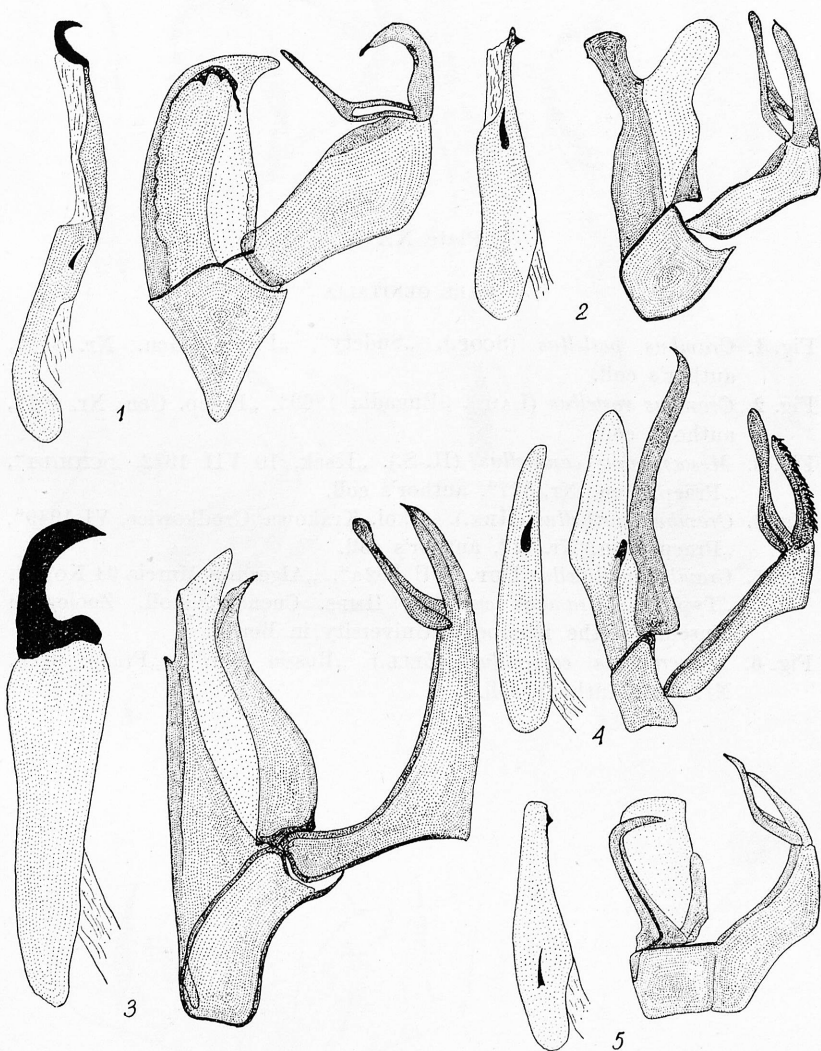


Auctor del.
St. Bleszyński

Plate XXVIII

MALE GENITALIA

- Fig. 1. *Crambus pratellus* (L.). „Polonia mer. Dulowa distr. Chrzanów 14 VII 1947“, „Praep. Gen. Nr. 354“, author's coll.
- Fig. 2. *Crambus dumetellus* (HBN.). „Okol. Krakowa Grodkowice, VI, 1948, BLESZYŃSKI“, „Praep. Gen. Nr. 29“, author's coll.
- Fig. 3. *Crambus heringiellus* H.-S. „Polonia mer.-occ.“, „Praep. Gen. Nr. 13“, author's coll.
- Fig. 4. *Crambus hamellus* (THNBG.). „Kraków Podgórk, 1 IX 1945“, „Praep. Gen. Nr. 7“, author's coll.
- Fig. 5. *Crambus palustrellus* RAG. „Gallia“, „Praep. Gen. Nr. 311“, author's coll.

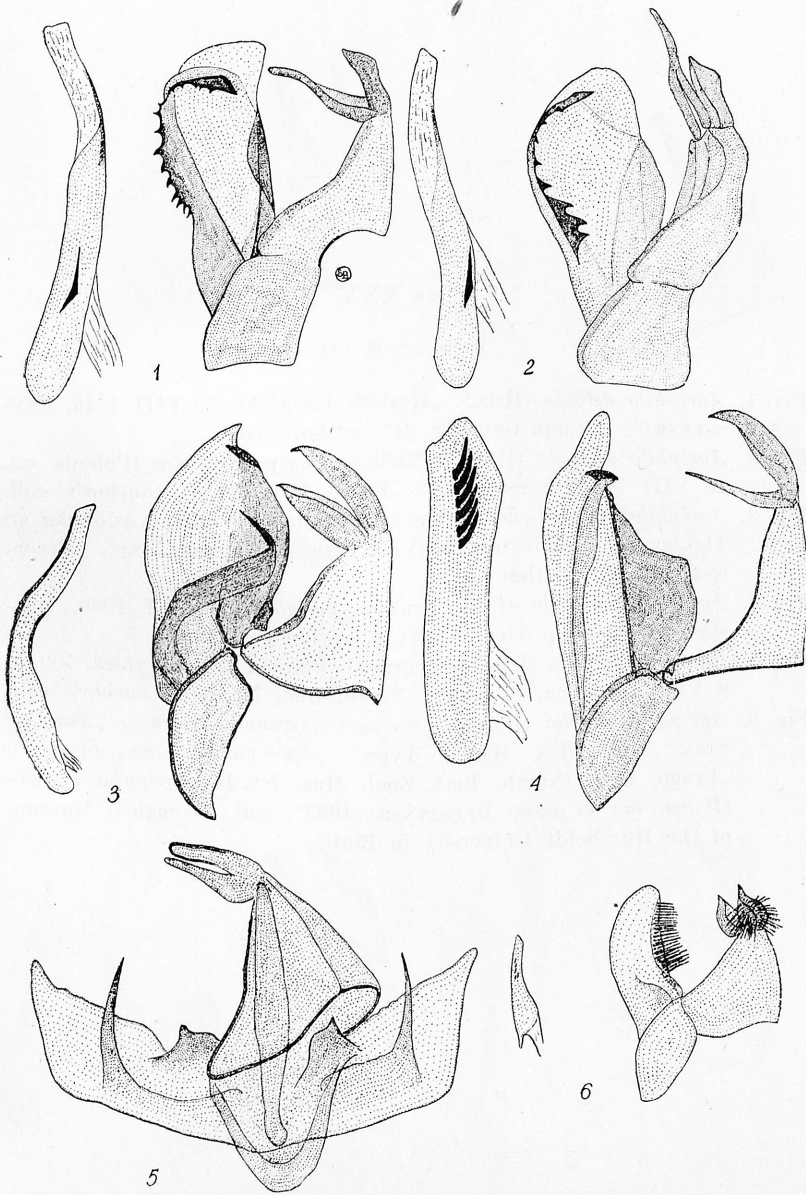


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Plate XXIX

MALE GENITALIA

- Fig. 1. *Crambus perlellus* (SCOP.). „Sudety“, „Praep. Gen. Nr. 353“, author's coll.
- Fig. 2. *Crambus rostellus* (LAH.). „Engadin 1869“, „Praep. Gen. Nr. 401“, author's coll.
- Fig. 3. *Mesocrambus candiellus* (H.-S.). „Izsák, 10 VII 1912, SCHMIDT“, „Praep. Gen. Nr. 327“, author's coll.
- Fig. 4. *Crambus hortuellus* (HBN.). „Okol. Krakowa Grodkowice, VI 1949“, „Praep. Gen. Nr. 41“, author's coll.
- Fig. 5. *Crambus pallidellus* DUP. „GU 802a“, „Algezares Murcia 94 KORB“, „Typus“, „*Crambus cuencalis* HMPS. Cuenca“, coll. Zoological Museum of the Humboldt University in Berlin.
- Fig. 6. *Metacrambus carectellus* (ZELL.) „Rossia mer.“, „Praep. Gen. Nr. 468“, author's coll.

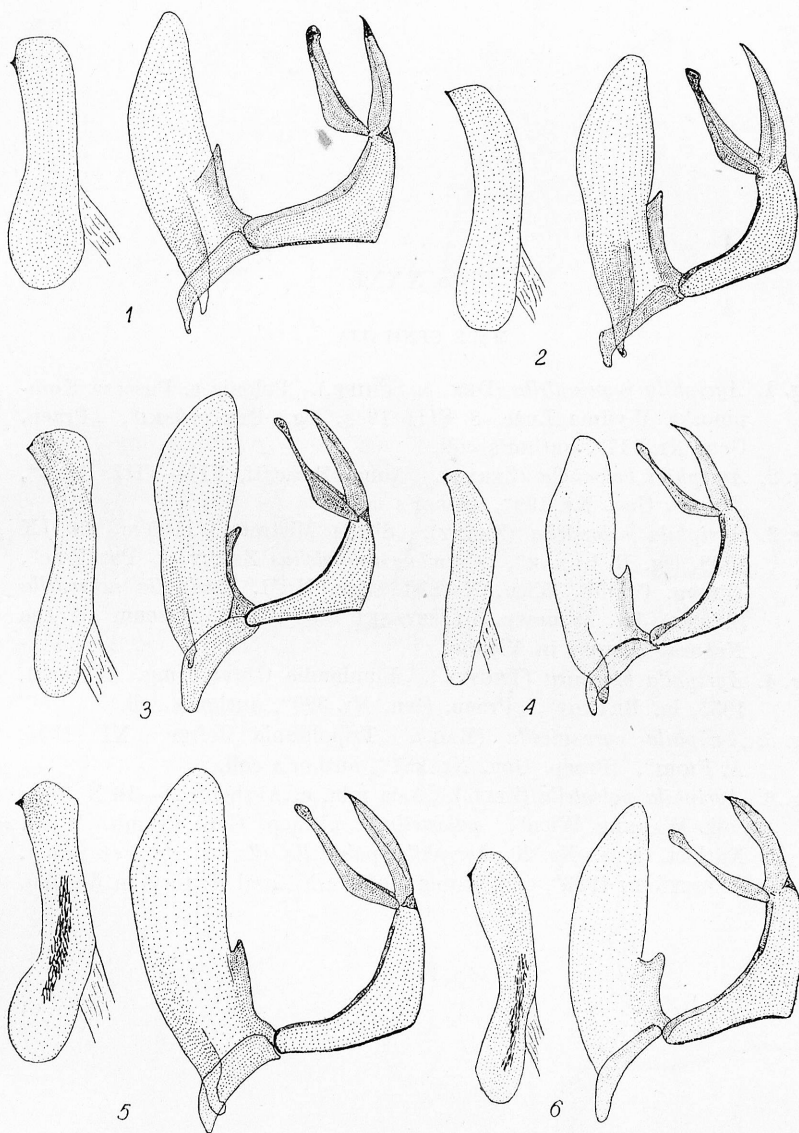


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Plate XXX

MALE GENITALIA

- Fig. 1. *Agriphila deliella* (HBN.). „Kraków Podgórk, 30 VIII 1946, BLESZYŃSKI“, „Praep. Gen. Nr. 24“, author's coll.
- Fig. 2. *Agriphila selasella* (HBN.). „Kielków Las pow. Mielec (Polonia c.), 18 VIII 1943, BLESZYŃSKI“, „Praep. Gen. Nr. 4“, author's coll.
- Fig. 3. *Agriphila aeneociliella* (EVERS.). „Polonia c. Wólka Kozłowska ad Thuszcz distr. Radzymin, 23 VIII 1949, leg. BLESZYŃSKI“, „Praep. Gen. Nr. 48“, author's coll.
- Fig. 4. *Agriphila culmella* (L.). „Kraków Podgórk, 1 VIII 1950, BLESZYŃSKI“, „Praep. Gen. Nr. 414“, author's coll.
- Fig. 5. *Agriphila tristella* (DEN. & SCHIFF.). „Polonia mer. Krynica, 700 m 9 VIII 1949, leg. A. GAJ“, „Praep. Gen. Nr. 184“, author's coll.
- Fig. 6. *Agriphila osseella* (HMPS.). „Typus“, „Granada Zark.“, „*osseellus* STGR.“, „*osseellus* HMPS. Type“, „ex collect. STAUDINGER“, „Praep. Gen. Cramb. Berl. Zool. Mus. Nr. 16 *Agriphila osseella* (HMPS.) det. et praep. BLESZYŃSKI 1953“, coll. Zoological Museum of the Humboldt University in Berlin.

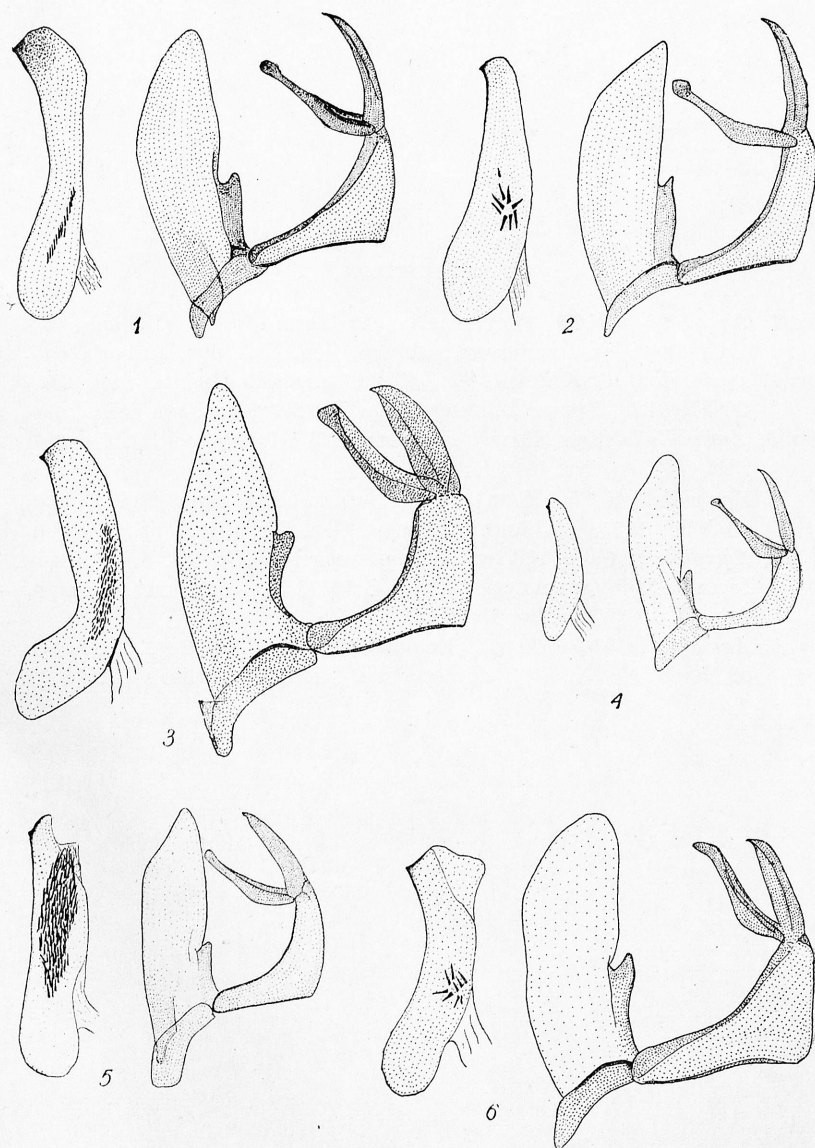


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Plate XXXI

MALE GENITALIA

- Fig. 1. *Agriphila inquinatella* (DEN. & SCHIFF.). „Polonia c. Puszcza Kampinoska Wydma Łuże, 8 VIII 1948, leg. BŁESZYŃSKI“, „Praep. Gen. Nr. 117“, author's coll.
- Fig. 2. *Agriphila brioniella* (ZERNY). „Roma Frascati, VII—VIII, 1943“, „Praep. Gen. Nr. 198“, author's coll.
- Fig. 3. *Agriphila nebrodella* (ZERNY). „Sicilia Mistretta, 1100 m, 23 IX 1938, leg. R. LUNAK“, „*Crambus nebrodellus* ZERNY ♂ Paratype“, „Praep. Cramb. Wien. Nathist. Mus. Nr. 1. *Agriphila nebrodella* (ZERNY) det. et praep. BŁESZYŃSKI 1953“, coll. Museum of the Natural History in Vienna.
- Fig. 4. *Agriphila biarmica* (TNGSTR.). „Finnlandia Otava Umg. (Mikkeli), 1935, lg. BRANDT“, „Praep. Gen. Nr. 329“, author's coll.
- Fig. 5. *Agriphila cyrenaicella* (RAG.). „Tripolitania Jefren, XI 1935, A. FIORI“, „Praep. Gen. Nr. 287“, author's coll.
- Fig. 6. *Agriphila paleatella* (ZELL.). „Asia min. c. Akshehir, 1—16 X 1931, coll. WAGNER Wien“, „*paleatellus*“, „Praep. Gen. Cramb. Wien. Nathist. Mus. Nr. 20 *Agriphila paleatella* (ZELL.) det. et praep. BŁESZYŃSKI 1953“, coll. Museum of the Natural History in Vienna.

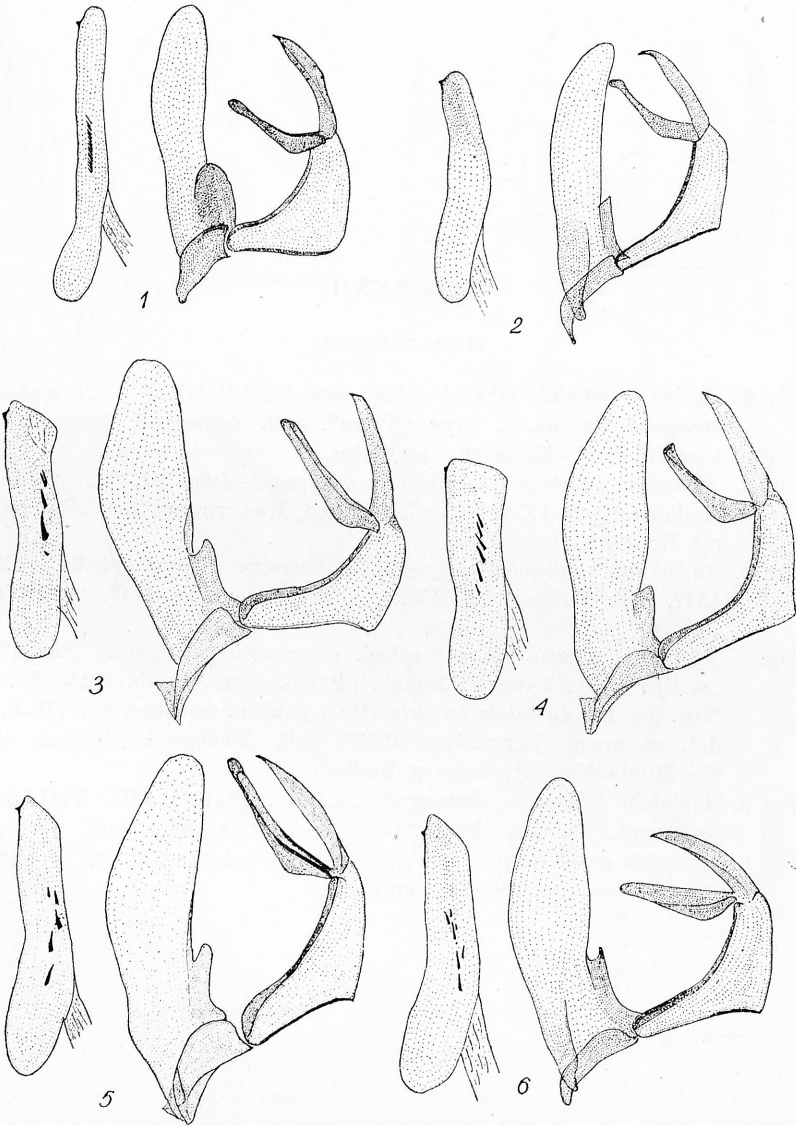


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Plate XXXII

MALE GENITALIA

- Fig. 1. *Agriphila poliella* (TREITSCH.). „Podkowa Leśna (Polonia c.), 1 IX 1940, leg. ŚWIDERSKI“, „Praep. Gen. Nr. 160“, author's coll.
- Fig. 2. *Agriphila trabeatella* (H.-S.). „Zentral-Algerien Guelt-es-Stel, 27—30 IX 1929, ZERNY“, „Praep. Gen. Nr. 273“, author's coll.
- Fig. 3. *Agriphila latistria* (HAW.). „Bussum, 19 VIII 1946, coll. C. DOETS“, „Praep. Gen. Nr. 404“, author's coll.
- Fig. 4. *Agriphila latistria* (HAW.). „Ost-Fries. Inseln Borkum Süd Dünen, 13 VIII 1935, E. JÄCKH“, „Praep. Gen. Nr. 404“, author's coll.
- Fig. 5. *Agriphila latistria* (HAW.). subsp. *monotaeniella* (H.-S.). „Italia Liguria Noli (Savona), 15—25 IX 1951, J. KLIMESCH“, „Praep. Gen. Nr. 396“, author's coll.
- Fig. 6. *Agriphila latistria* (HAW.). „England Sussex coll. Wittle“, „Exchange of the B. M. (N. H.)“, „Praep. Gen. Nr. 263“, author's coll.

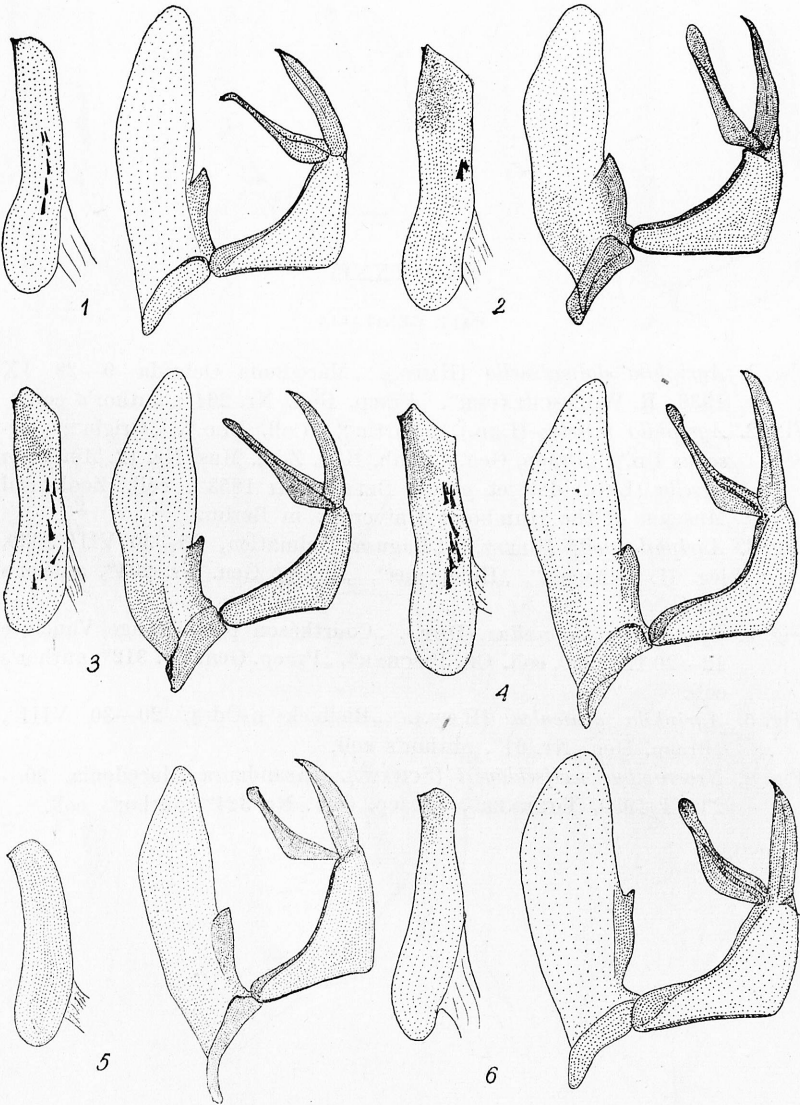


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Plate XXXIII

MALE GENITALIA

- Fig. 1. *Agriphila latistria* (HAW.) subsp. *monotaeniella* (H.-S.). „*Crambus monotaeniellus* H. S. Type Olymp“, coll. Zoological Museum of the Humboldt University in Berlin.
- Fig. 2. *Agriphila latistria* (HAW.) subsp. *monotaeniella* (H.-S.). „*Sicilia Madonia 1000'*, IX 1907, coll. KRÜGER, Mus. TURATI E.“, „*Praeparat Nr. 1754*“, coll. TOLL.
- Fig. 3. *Agriphila* ? *vallicolella* (COSTA). „*Mistretta 1000 m Sicilia, IX 1937*, coll. H. REISSER, Wien“, „*Praep. Gen. Nr. 474*“, author's coll.
- Fig. 4. *Agriphila latistria* (HAW.) subsp. *monotaeniella* (H.-S.). „*Sicilia*“, „*vectifer* STGR. Type“, „*Origin*“, „*Praep. Gen. Cramb. Berl. Zool. Mus. Nr. 10. Agriphila latistria* (HAW.) subsp. *monotaeniella* (H.-S.) det. et praep. BLESZYŃSKI 1953“, coll. Zoological Museum of the Humboldt University in Berlin.
- Fig. 5. *Agriphila hungarica* (SCHMIDT). „*K. Szt. Miklós, 1913 VIII 30 SCHMIDT*“, „*Cotyp*“, „*Praep. Gen. Nr. 232*“, author's coll.
- Fig. 6. *Agriphila graphella* (CONST.). „*Sucurác. b. Spalato, NOVAK, 15 VI*“, „*Praep. Gen. Nr. 466*“, author's coll.

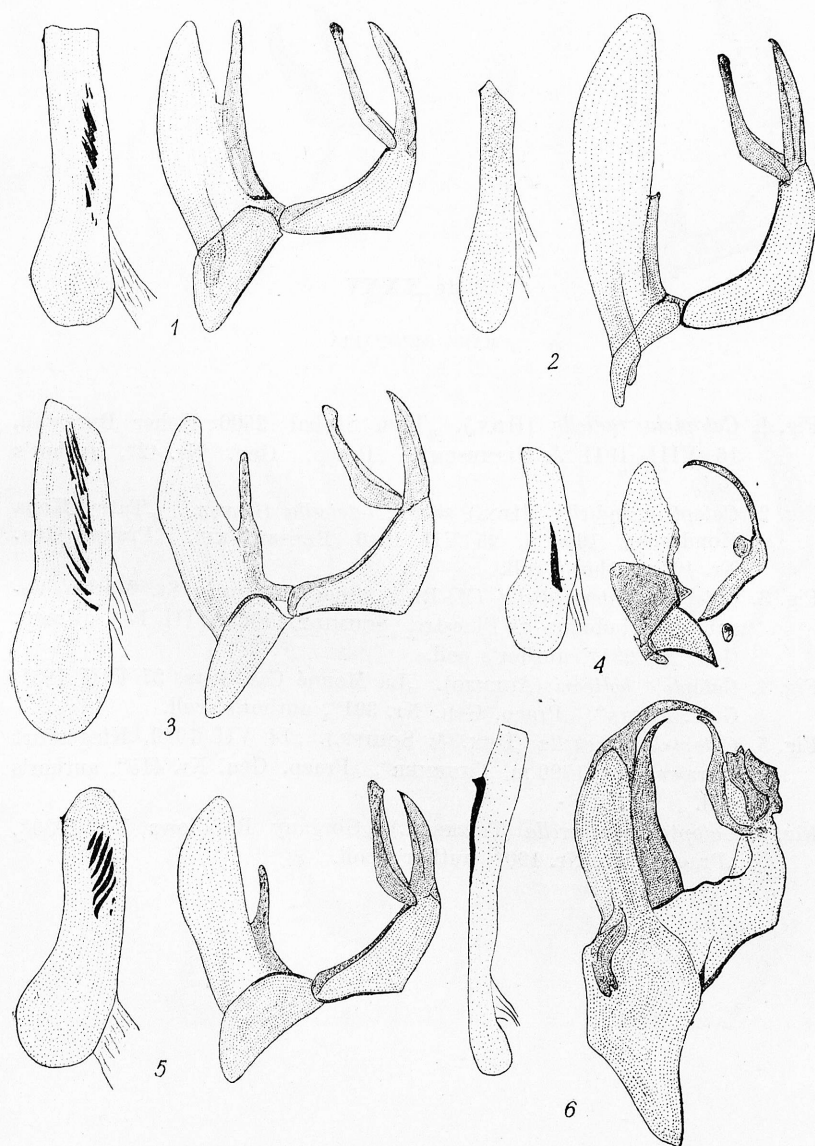


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Plate XXXIV

MALE GENITALIA

- Fig. 1. *Agriphila dalmatinella* (Hmps.). „Macedonia Ochrida 9—29 IX 1936, R. WOLFSCHLÄGER“, „Praep. Gen. Nr. 264“, author's coll.
- Fig. 2. *Agriphila tersella* (Led.). „Martin“, „Coll. Led.“, „Origin“, „*tersellus* Ld.“, „Praep. Gen. Cramb. Berl. Zool. Mus. Nr. 12. *Agriphila tersella* (Led.) det. et praep. BLESZYŃSKI 1953“, coll. Zoological Museum of the Humboldt University in Berlin.
- Fig. 3. *Agriphila tolli* (Blesz.). „Ragusa Dalmatien, 25—30 VIII 1930, leg. H. G. AMSEL“, „Holotypus“, „Praep. Gen. Nr. 204“, author's coll.
- Fig. 4. *Crambopsis malacellus* (Dup.). „Courthézon près Orange Vaucluse 12—20 IX 1950, coll. Ch. Fischer“, „Praep. Gen. Nr. 312“, author's coll.
- Fig. 5. *Agriphila geniculea* (Haw.). „Bielinek n/Odra, 20—30 VIII“, „Praep. Gen. Nr. 67“, author's coll.
- Fig. 6. *Neocrambus wolfschlägeri* (Schaw.). „Asandzura Macedonia, 20—23 VI 1939, Thurner“, „Praep. Gen. Nr. 324“, author's coll.



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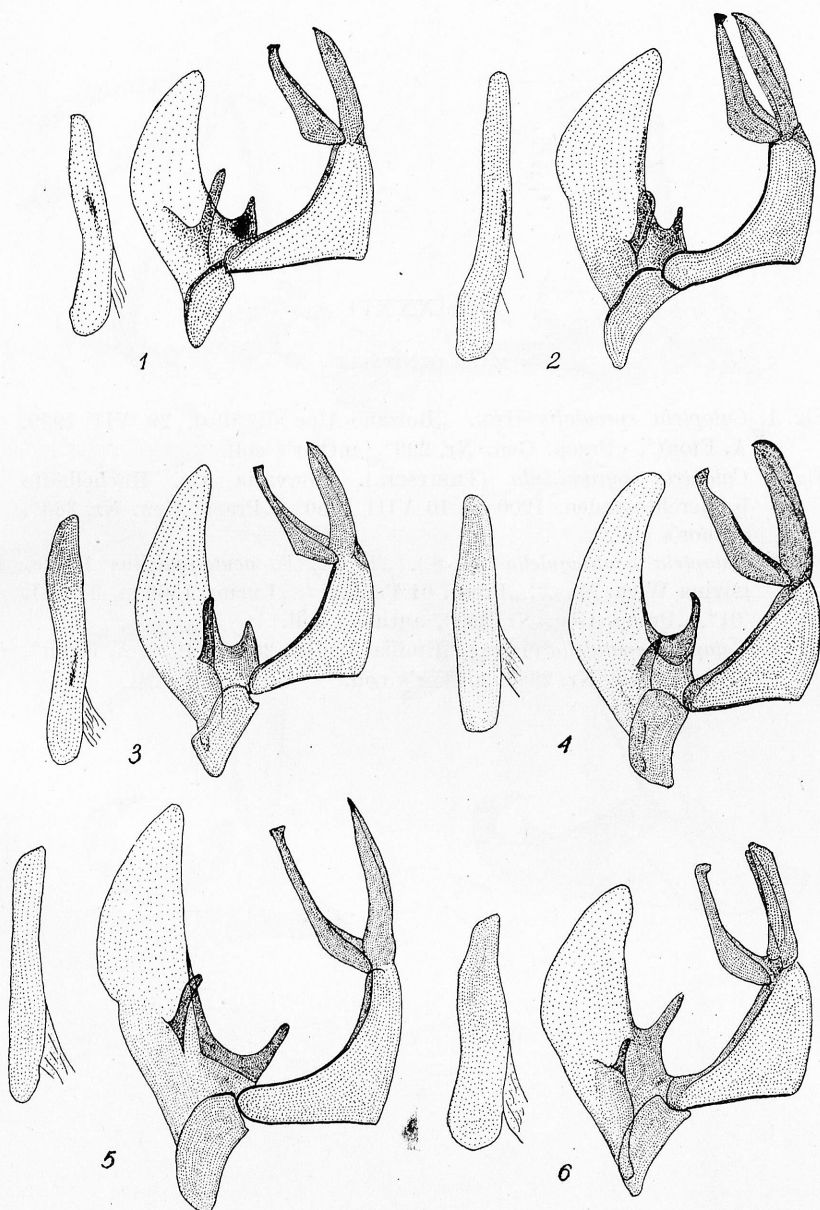
Plate XXXV

MALE GENITALIA

- Fig. 1. *Catoptria radiella* (HBN.). „Tiroi Stubal 2500 Hoher Burgstall, 16 VIII 1941 J. KLIMESCH“, „Praep. Gen. Nr. 42“, author's coll.
- Fig. 2. *Catoptria radiella* (HBN.) subsp. *tatricella* (BLESZ.). „Tatry Kopa Kondracka, 1900 m, 25 VII 1946, BLESZYŃSKI“, „Praep. Gen. Nr. 46“, author's coll.
- Fig. 3. *Catoptria intermediella* (M.-R.). „Alpes Maritimes St. Martin Vesubie“, „Madonna di Finestre, SCHMIDT, 1925 VIII 17“, „Praep. Gen. Nr. 231“, author's coll.
- Fig. 4. *Catoptria bolivari* (AGENJO). „La Monné Cauterets, 27 VIII 1951, G. T. ADKIN“, „Praep. Gen. Nr. 391“, author's coll.
- Fig. 5. *Catoptria conchella* (DEN. & SCHIFF.). „14 VII 1949, Klagenfurt Karawanken, 1700 m, THURNER“, „Praep. Gen. Nr. 415“, author's coll.
- Fig. 6. *Catoptria pauperella* (TREITSCH.). „Gorgany Rafajłowa, VII 1939“, „Praep. Gen. Nr. 190“, author's coll.

CORRIGENDA

In the explanation of the plate XXXV the numbers of figures 4 and 5 should be changed.

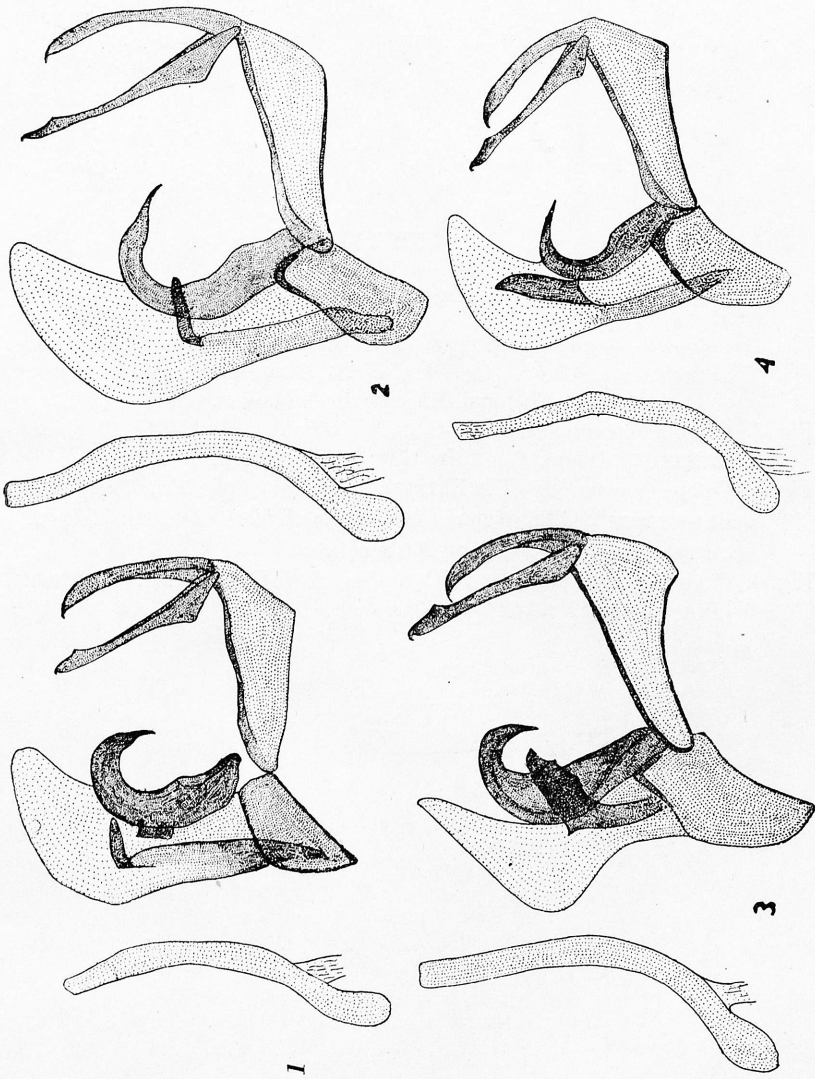


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Plate XXXVI

MALE GENITALIA

- Fig. 1. *Catoptria specularis* HBN. „Bolzano-Alpe di Siusi, 29 VII 1939, A. FIORI“, „Praep. Gen. Nr. 296“, author's coll.
- Fig. 2. *Catoptria pyramidella* (TREITSCH.). „Bavaria alp. Hachelhöffe b. Berchtesgaden, 1200 m, 10 VIII 1950“, „Praep. Gen. Nr. 383“, author's coll.
- Fig. 3. *Catoptria acutangulella* (H.-S.). „T. 02. F. *acutangulellus* Herzegovina Wien. Mus.“, „Prenj. 01 Penther“, „Lucina 1500 m, 31 VII, '01“, „Praep. Gen. Nr. 259“, author's coll.
- Fig. 4. *Catoptria spatulella* (TRT.). „Emilia Radici, 26 VII 1929, A. FIORI“, „Praep. Gen. Nr. 298“, author's coll.

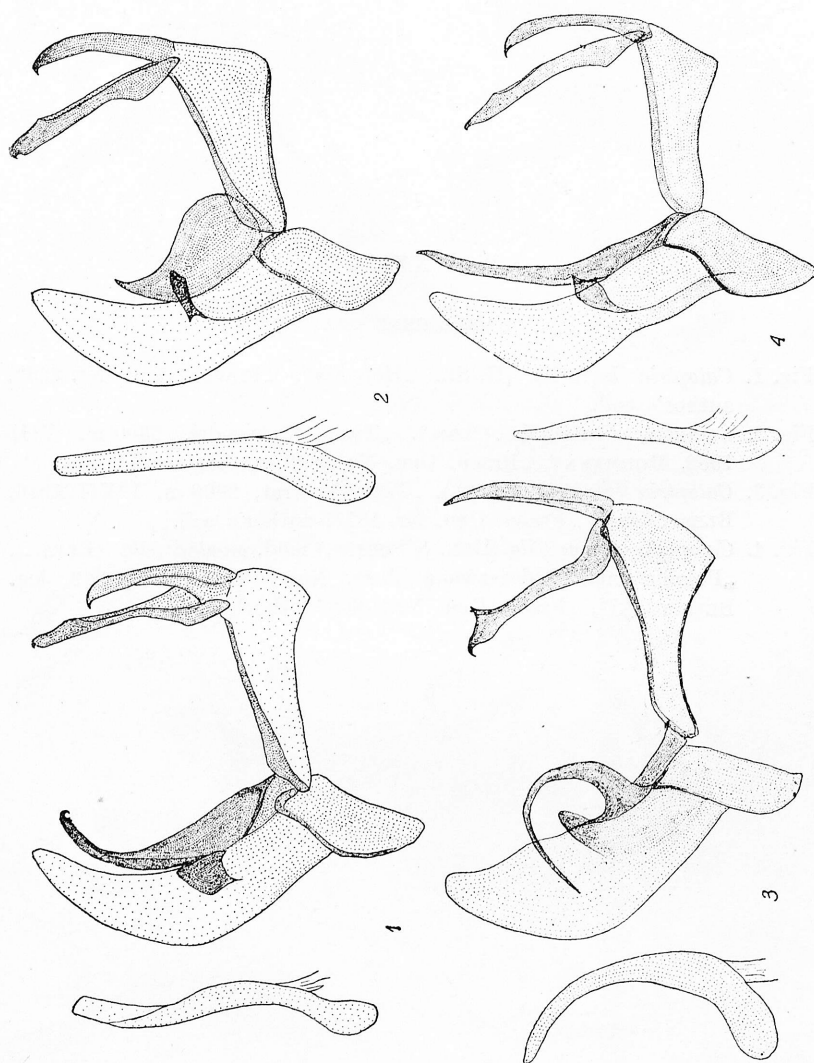


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Plate XXXVII

MALE GENITALIA

- Fig. 1. *Catoptria gozmányi* BLESZ. „Retyezát DIÓSZEGHY“. Paratypus. „Praep. Gen. Hung. Nat. Mus. Nr. 4 *Catoptria gozmányi* BLESZ.“, coll. Hungarian National Museum in Budapest.
- Fig. 2. *Catoptria permutatella* (H.-S.). „Kraków Podgórk, VII 1948, BLESZYŃSKI“, „Praep. Gen. Nr. 171“, author's coll.
- Fig. 3. *Catoptria osthelderi* (DE LATTIN). „Kraków Podgórk, 25 VI 1947, BLESZYŃSKI“, „Paratype *Crambus osthelderi* DR. DE LATTIN“, „Praep. Gen. Nr. 173“, author's coll.
- Fig. 4. *Catoptria myella* (HBN.). „Carinthia, 5 VII 1951, leg. THURNER“, „Praep. Gen. Nr. 262“, author's coll.

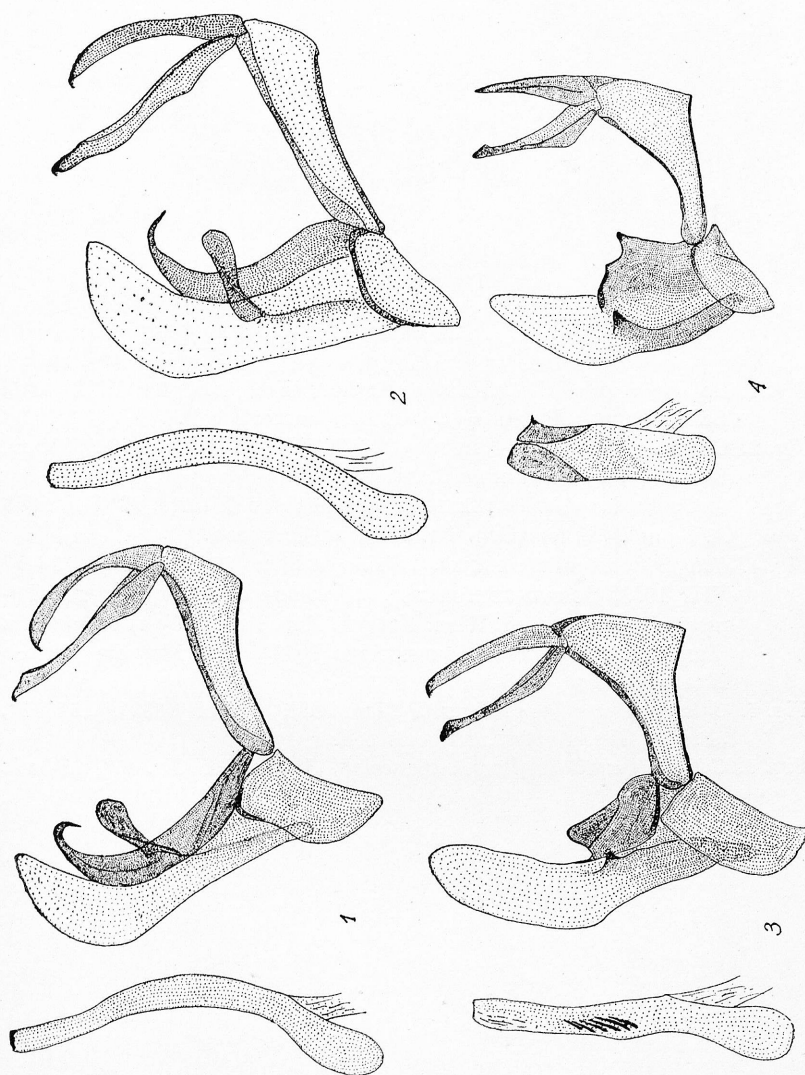


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Plate XXXVIII

MALE GENITALIA

- Fig. 1. *Catoptria luctuella* (H.-S.). „Helvetia“, „Praep. Gen. Nr. 226“, author's coll.
- Fig. 2. *Catoptria luctiferella* (HBN.). „Tirol Karwendel, 2300 m, VIII 1952, BURMANN“, „Praep. Gen. Nr. 480“, author's coll.
- Fig. 3. *Catoptria furcatella* (ZETT.). „Tatry Zawrat, 2000 m, 1 VII 1946, BLESZYŃSKI“, „Praep. Gen. Nr. 187“, author's coll.
- Fig. 4. *Catoptria margaritella* (DEN. & SCHIFF.) mod. *montanicella* (BLESZ.). „Polonia mer. Podczerwone distr. Nowy Targ, VII 1949, leg. BLESZYŃSKI“, „Praep. Gen. Nr. 193“, author's coll.

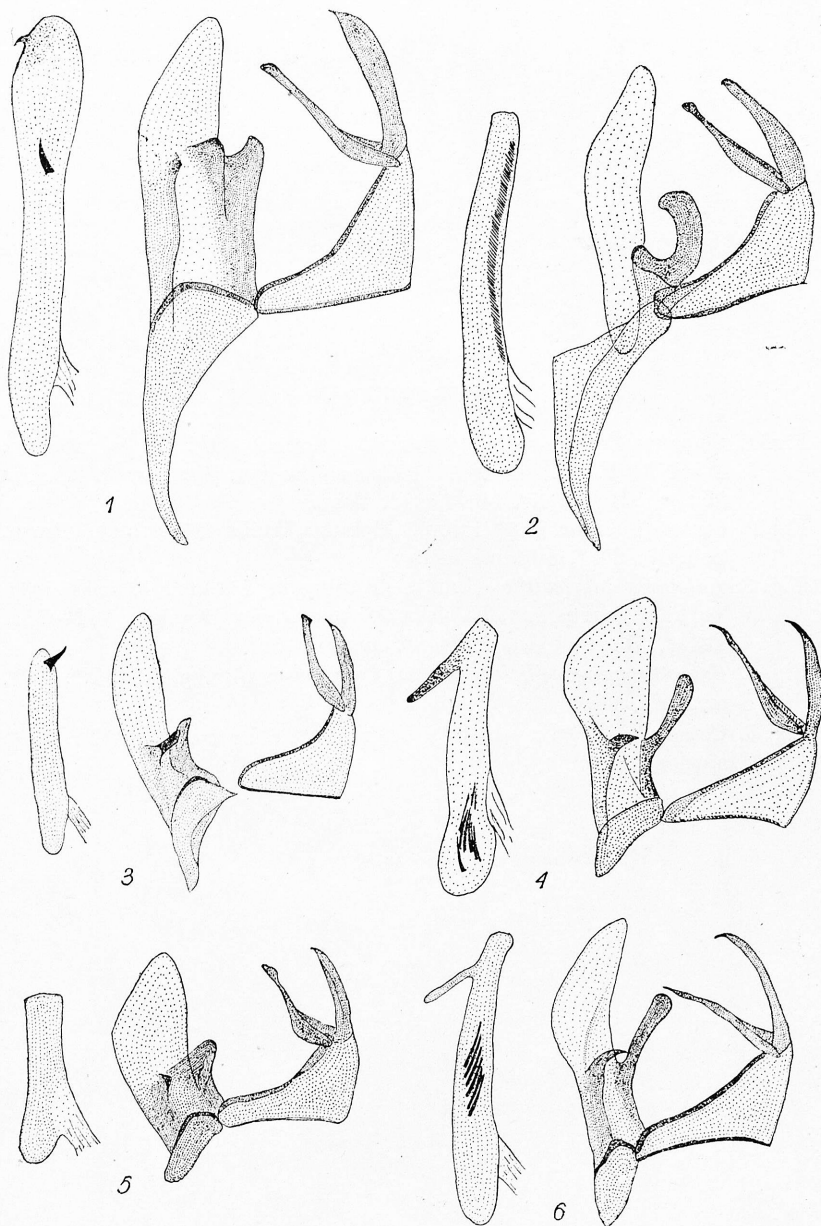


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Plate XXXIX

MALE GENITALIA

- Fig. 1. *Catoptria fulgidella* (HBN.) „Kraków Podgórk, 28 VIII 1945, BLESZYŃSKI“, „Praep. Gen. Nr. 44“, author's coll.
- Fig. 2. *Catoptria biformella* (REBEL). „15—25 VII 1933, Pirin Gb. 2000 m, Bulgarien, leg. THURNER“, author's coll.
- Fig. 3. *Catoptria languidella* (ZELL.). „Trento Lago Ritorto 22 VII 1946 A. FIORI“, „Praep. Gen. Nr. 242“, author's coll.
- Fig. 4. *Catoptria aetnella* (ZERNY). „Sizilia Aetna, 1600—2200 m, 8—17 VIII 1938, SCHWINGENSCHUSS“, „*Crambus aetnellus* ZERNY ♂ Paratype“, „Praep. Gen. Wien. Nathist. Mus. Nr. 17, *Catoptria aetnella* (ZERNY) det. et praep. BLESZYŃSKI 1953“, coll. Museum of the Natural History in Vienna.
- Fig. 5. *Catoptria maculalis* (ZETT.). „Tromsdal, 6 VII 1880“, „51381“, „Praep. Gen. Nr. 32“, author's coll.
- Fig. 6. *Catoptria mytilella* (HBN.). „Graecia“, „Praep. Gen. Nr. 45“, author's coll.

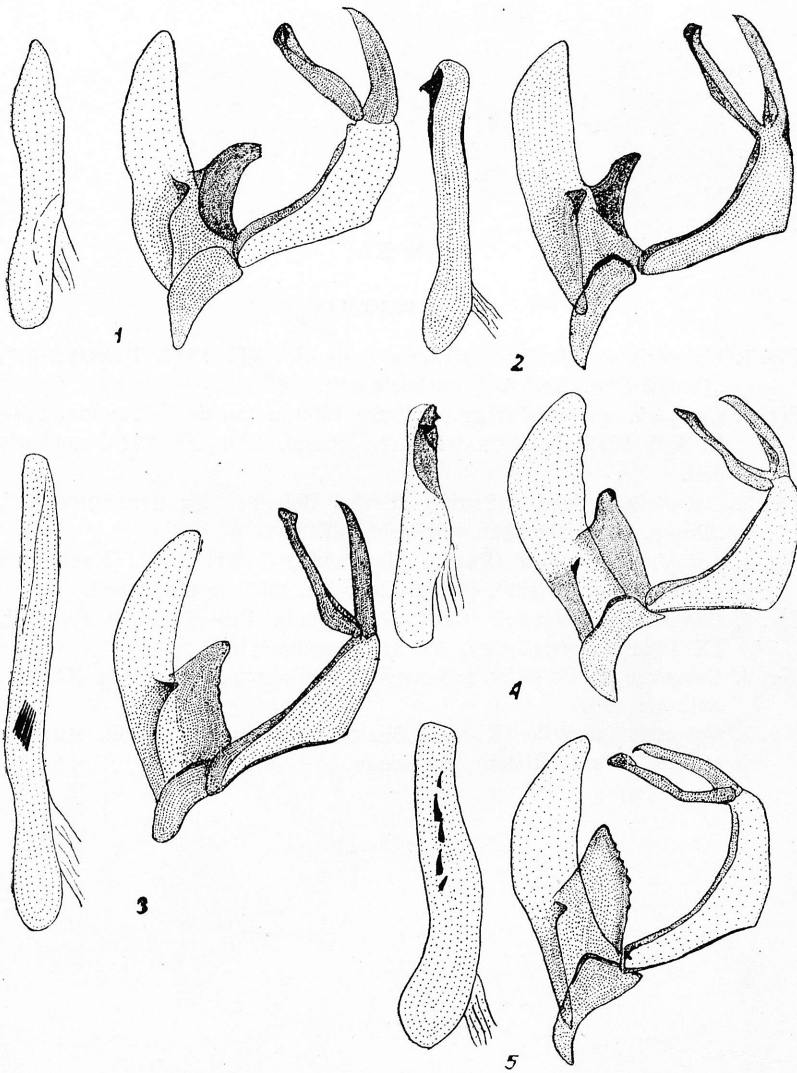


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Plate XL

MALE GENITALIA

- Fig. 1. *Catoptria müller-rutzi* (WEHRLI). „Zermatt Hörnli ca 2800 m, 4 VIII 1932, DR. GIESE“, „*Crambus müller-rutzi* WEHRLI, dr. WEHRLI [det.]“, „Praep. Nr. 1451“, coll. TOLL.
- Fig. 2. *Catoptria zermattensis* (FREY). „Helvetia Wallis 1872 STGR.“, „Praep. Gen. Nr. 237“, author's coll.
- Fig. 3. *Catoptria laevigatella* (LED.). „Karangom 1810 m, 18 VII 1935, leg. R. WOJTUSIAK“, „Polska Wyprawa na Kaukaz VII—VIII 1935“, „Praep. Gen. Nr. 470“, author's coll.
- Fig. 4. *Catoptria pseudociliciella* sp. n. „Caucasus“, „Praep. Gen. Nr. 297“, author's coll.
- Fig. 5. *Catoptria digitella* (H.-S.). „Pyrenees“, „Praep. Gen. Nr. 249“, author's coll.

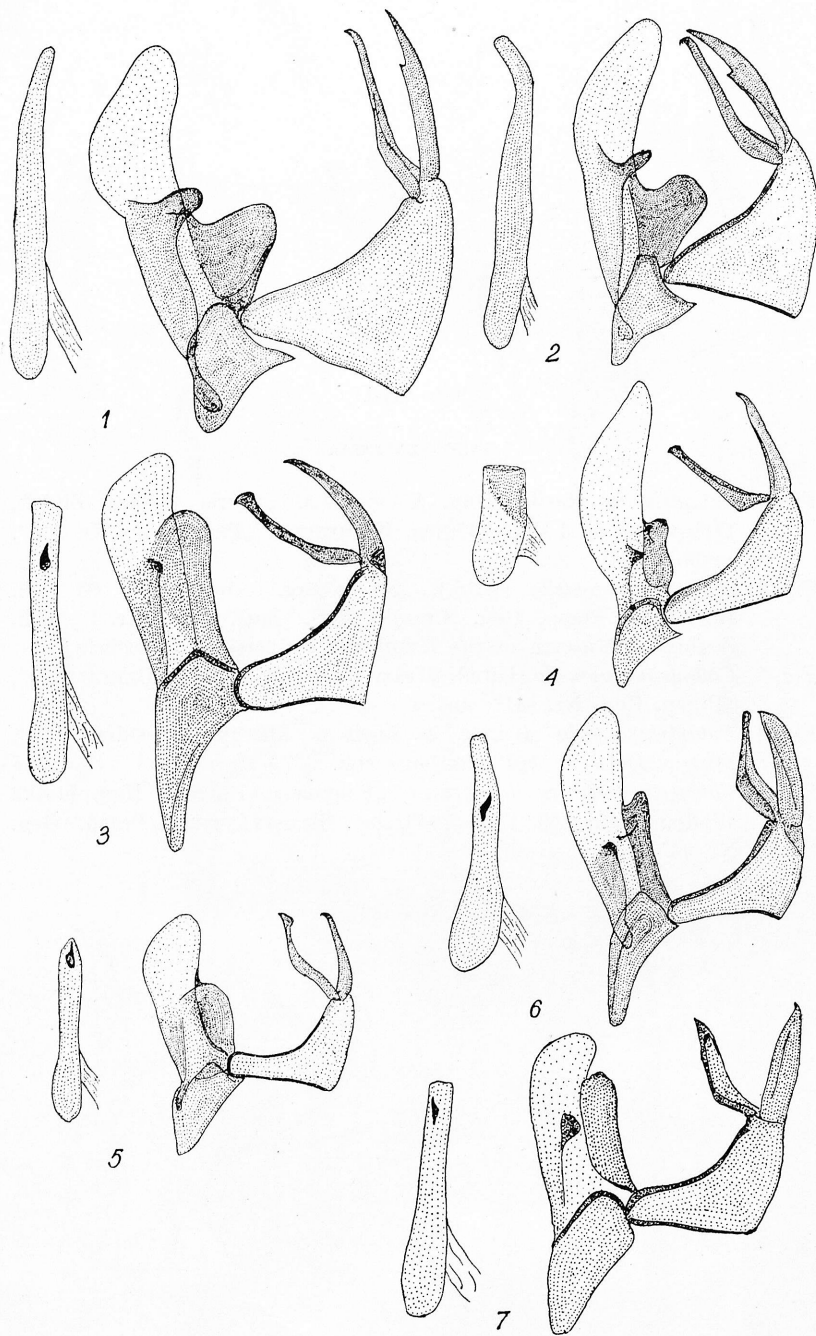


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Plate XLI

MALE GENITALIA

- Fig. 1. *Catoptria pinella* (L.). „Kraków Podgórk, VII 1947, BLESZYŃSKI“, „Praep. Gen. Nr. 181“, author's coll.
- Fig. 2. *Catoptria corsicella* (DUP.). „Corse 1300 m Col de Vizzavona, 22—31 VII 1927, DR. SCHAWERDA“, „Praep. Gen. Nr. 392“, author's coll.
- Fig. 3. *Catoptria confusella* (STGR.). „Praha Bohemia, leg. DR. SCHWARZ“, „Praep. Gen. Nr. 236“, author's coll.
- Fig. 4. *Catoptria permiaca* (PET.). „Manchuria, 7 VII 1940, Kaolingsu Station Prov. Kirin“, Praep. Gen. Nr. 430“, author's coll.
- Fig. 5. *Catoptria staudingeri* (ZELL.). „Hispania Prov. Madrid Escorial, IX 1923“, „Praep. Gen. Nr. 330“, author's coll.
- Fig. 6. *Catoptria falsella* (DEN. & SCHIFF.). „Kraków“, „Praep. Gen. Nr. 30“, author's coll.
- Fig. 7. *Catoptria incertella* (H.-S.). „STAUDG. Caucas 1882“, coll. Museum of the Natural History in Vienna.

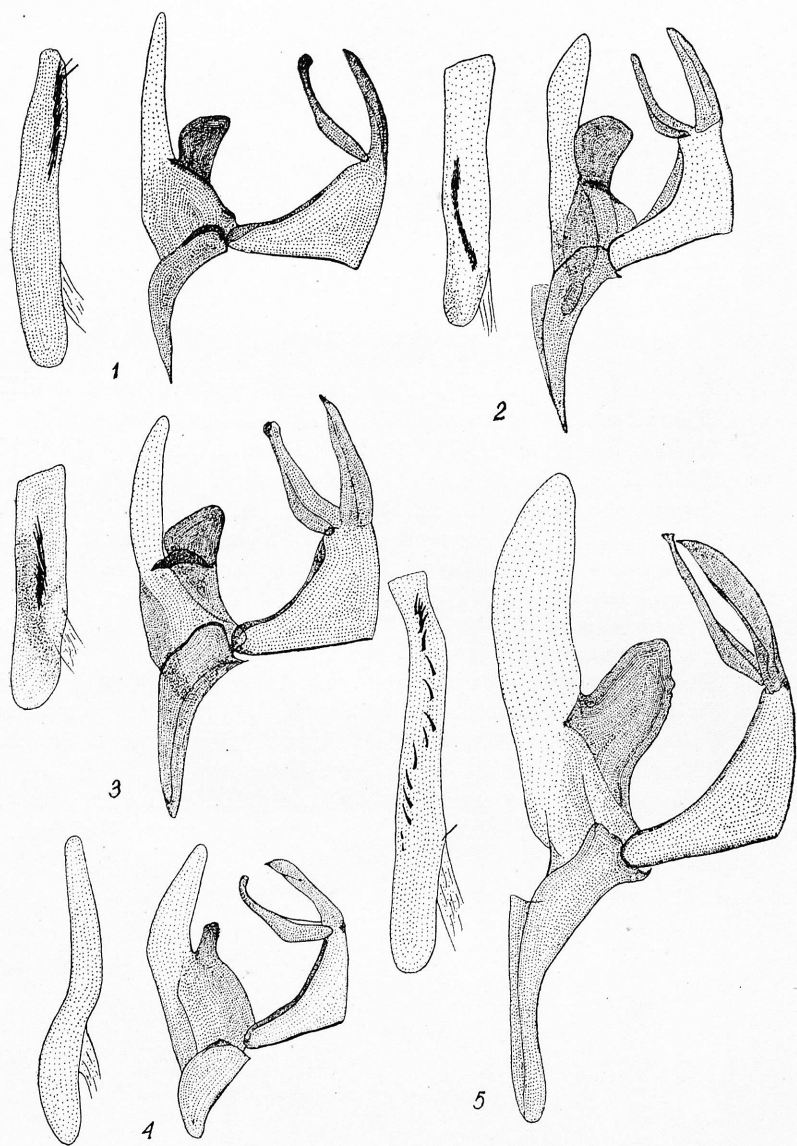


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Plate XLII

MALE GENITALIA

- Fig. 1. *Catoptria combinella* (DEN. & SCHIFF.). „Styria Gesäuse Zinödl, 1700—1800 m, 3 VII 1937, leg. KLIMESCH“, „Praep. Gen. Nr. 235“, author's coll.
- Fig. 2. *Catoptria orientella* (H.-S.). „Siebenbürg. Alpen Wo. 66 Coll. MöSCHL“, „Praep. Gen. Cramb. Berl. Zool. Mus. Nr. 4“, coll. Zoological Museum of the Humboldt University in Berlin.
- Fig. 3. *Catoptria coultonella* (DUP.). „Tatry Beskid, VII 1946, BŁESZYŃSKI“, „Praep. Gen. Nr. 131“, author's coll.
- Fig. 4. *Catoptria verella* (GERM. & ZINCK.). „Bielinek n/Odra, VII“, „Praep. Gen. Nr. 161“, author's coll.
- Fig. 5. *Catoptria lythargyrella* (HBN.). „Polonia c. Puszcza Kampinoska Wydma Łuże, 23 VIII 1949, leg. BŁESZYŃSKI“, „Praep. Gen. Nr. 43“, author's coll.

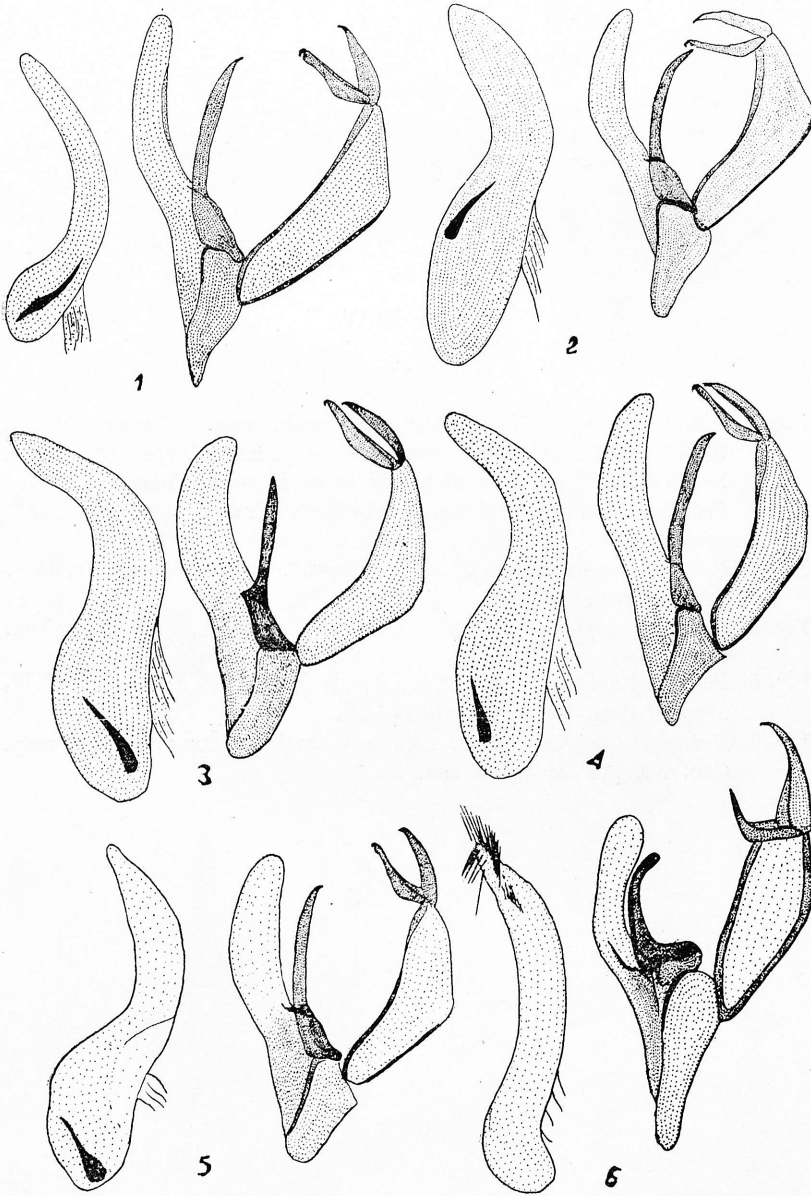


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Plate XLIII

MALE GENITALIA

- Fig. 1. *Pediasia pedriolella* (DUP.). „Teriolis m. Rofenberg, 2400 m, 4 VIII 1951, KLIMESCH“, „Praep. Gen. Nr. 295“, author's coll.
- Fig. 2. *Pediasia jucundella* (H.-S.). „Budapest, UHRİK, Kamarae, 18 VIII 1935“, „Praep. Gen. Nr. 257“, author's coll.
- Fig. 3. *Pediasia adamczewskii* BLESZ. „F. 6 VIII, Ural m. Guberli., DUSKE“, „*Crambus epineurus* MEYR. determ. trans ex coll. Mus. Stettin“, „*Pediasia adamczewskii* BLESZ. Holotypus Praep. Gen. MZP Nr 24, praep. BLESZYŃSKI 1951“, coll. I. Z. P. A. S., Warszawa.
- Fig. 4. *Pediasia sareptella* BLESZ. „1871, Rossia m. Sarepta Z. CHR.“, „*Crambus pudibundellus* H. S. Determ. trans. ex coll. Mus. Stettin“, „*Pediasia sareptella* BLESZ. Holotypus Praep. Gen. Cramb. MZP Nr. 28, praep. BLESZYŃSKI 1951“, coll. I. Z. P. A. S., Warszawa.
- Fig. 5. *Pediasia epineura* (MEYR.). „Coll. ZELL.“, „Praep. Gen. Cramb. Brit. Mus. Nr. 1“, coll. British Mus. (Nat. Hist.).
- Fig. 6. *Pediasia hispanica* BLESZ. Holotypus. „Gredos, VIII 1907 Arias“, „Praep. Nr. 2703“, coll. Hungarian National Museum, Budapest.

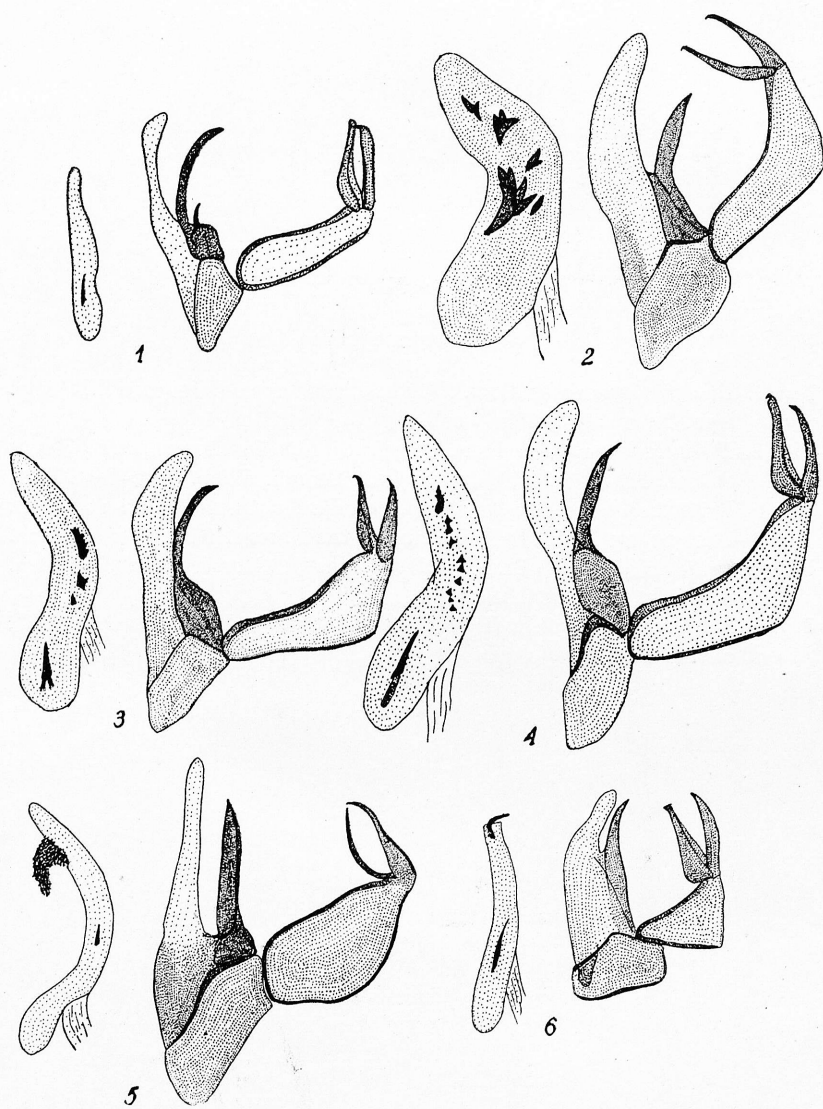


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Plate XLIV

MALE GENITALIA

- Fig. 1. *Pediasia steppicolella* (ZERNY). „Orenbg. mer. Tenger Oberst, 10 VI 1892“, „*Crambus steppicolellus* ZERNY, Type ♂“, Praep. Nr. 3707, coll. Museum of the Natural History, Vienna.
- Fig. 2. *Pediasia subflavella* (DUP.). „Corsica“. Praep. Gen. Nr. 258” author’s coll.
- Fig. 3. *Pediasia soffneri* BLESZ. „Rossia mer.“, „Praep. Gen. Nr. 460“. author’s coll.
- Fig. 4. *Pediasia soffneri* BLESZ. „Sarepta Indorsk, 26 V“, coll. H. G. AMSEL.
- Fig. 5. *Pediasia contaminella* (HBN.). „Rossia Mińsk, 15 VII — 15 VIII“, „Praep. Gen. Nr. 39“, author’s coll.
- Fig. 6. *Pediasia siculella* (DUP.). „Malta Gharghur, DELUCCA“, „Praep. Gen. Nr. 438“, author’s coll.

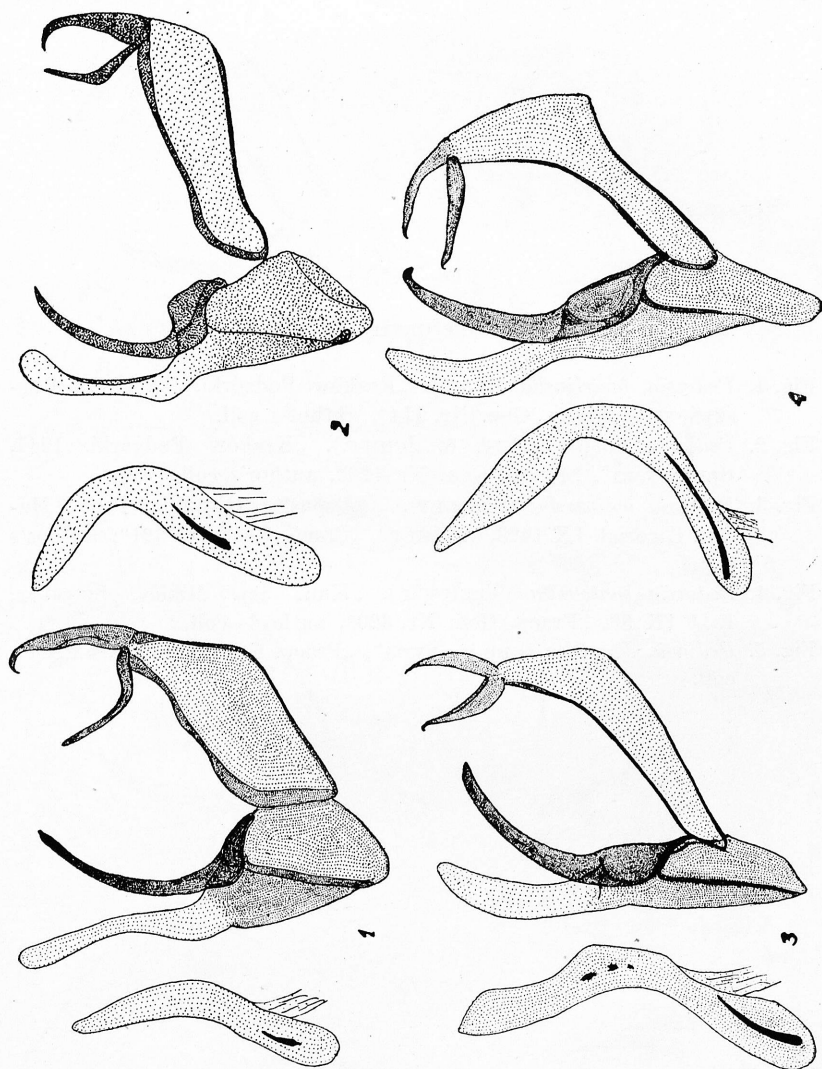


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Plate XLV

MALE GENITALIA

- Fig. 1. *Pediasia squalidalis* HBN. „Vannes l'aout ex coll. JOANNIS“, „Praep. Gen. Nr. 272“, author's coll.
- Fig. 2. *Pediasia squalidalis* HBN. subsp. *caradjaella* (REBEL). „F. SALAY Sulina, 5 IX 1924“, „Praep. Gen. Cramb. Wien. Nat.-Hist. Mus., Nr. 5 *Pediasia salinella* subsp. *caradjaella* (REBEL) det. et praep. BLESZYŃSKI 1953“, coll. Museum of the Natural History in Vienna.
- Fig. 3. *Pediasia hübneri* BLESZ. „Holotypus“, „Rossia mer.“, „Praep. Gen. Nr. 274“, author's coll.
- Fig. 4. *Pediasia pudibundella* (H.-S.). „Sarepta CHR.“, „Praep. Gen. Nr. 248“, author's coll.

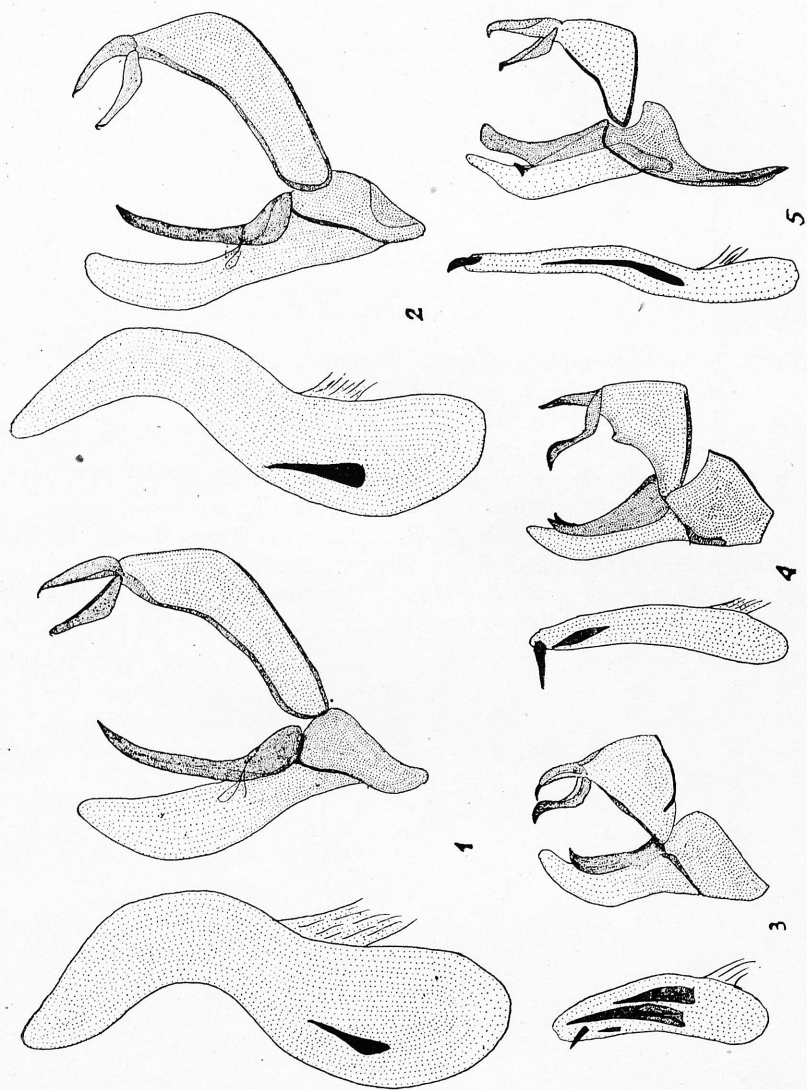


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Plate XLVI

MALE GENITALIA

- Fig. 1. *Pediasia fascelinella* (HBN.). „Kraków Podgórk, VI 1947, BLESZYŃSKI“, „Praep. Gen. Nr. 114“, author's coll.
- Fig. 2. *Pediasia luteella* (DEN. & SCHIFF.). „Kraków Podgórk, 1947, BLESZYŃSKI“, „Praep. Gen. Nr. 120“, author's coll.
- Fig. 3. *Pediasia bolivarella* (SCHMIDT). „Cotypus“, „Hispania Prov. Madrid Escorial, IX 1923, SCHMIDT“, „Praep. Gen. Nr. 321“, author's coll.
- Fig. 4. *Pediasia matricella* (TREITSCH.). „Kun. Szt. Miklós, SCHMIDT, 1911 IX 8“, „Praep. Gen. Nr. 320“, author's coll.
- Fig. 5. *Pediasia desertella* (LED.). „Syria“, „Praep. Gen. Nr. 315“, author's coll.

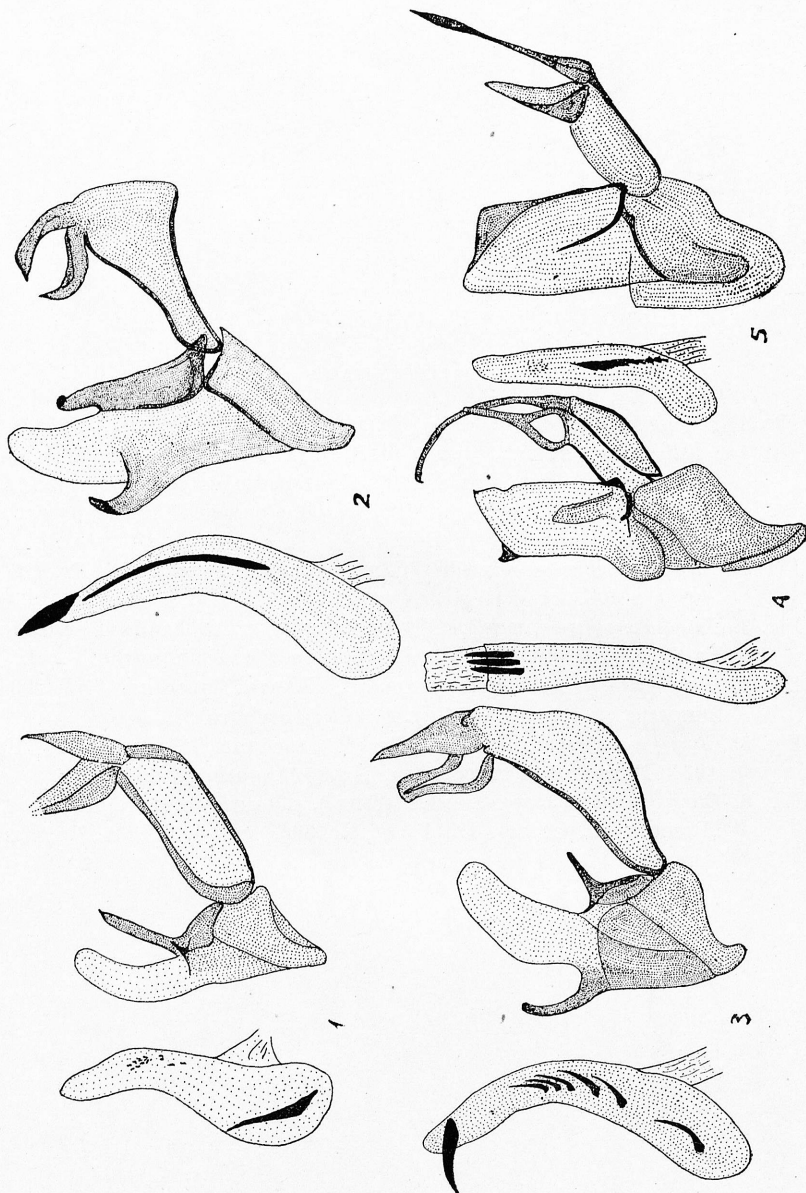


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Plate XLVII

MALE GENITALIA

- Fig. 1. *Pediasia truncatella* (ZETT.). „Livonia“, „Praep. Gen. Cramb. IZ. PAN Nr. 38“, coll. I. Z. P. A. S., Warszawa.
- Fig. 2. *Thisanotia lucella* (H.-S.). „1866 Carniol. MN.“, „Praep. Gen. Nr. 241“, author's coll.
- Fig. 3. *Thisanotia chrysonuchella* (SCOP.). „Kraków Podgórk, 3 V 1947, BLESZYŃSKI“, „Praep. Gen. Nr. 384“, author's coll.
- Fig. 4. *Calamotropha aureliella* (F.-R.). „Hungaria Tuszka Tészér, 12 VII 1929, OSTHELDER“, „Praep. Gen. Nr. 350“, author's coll.
- Fig. 5. *Calamotropha paludella* (HBN.). „Kraków Podgórk, 14 VII 1946, BLESZYŃSKI“, „Praep. Gen. Nr. 37“, author's coll.

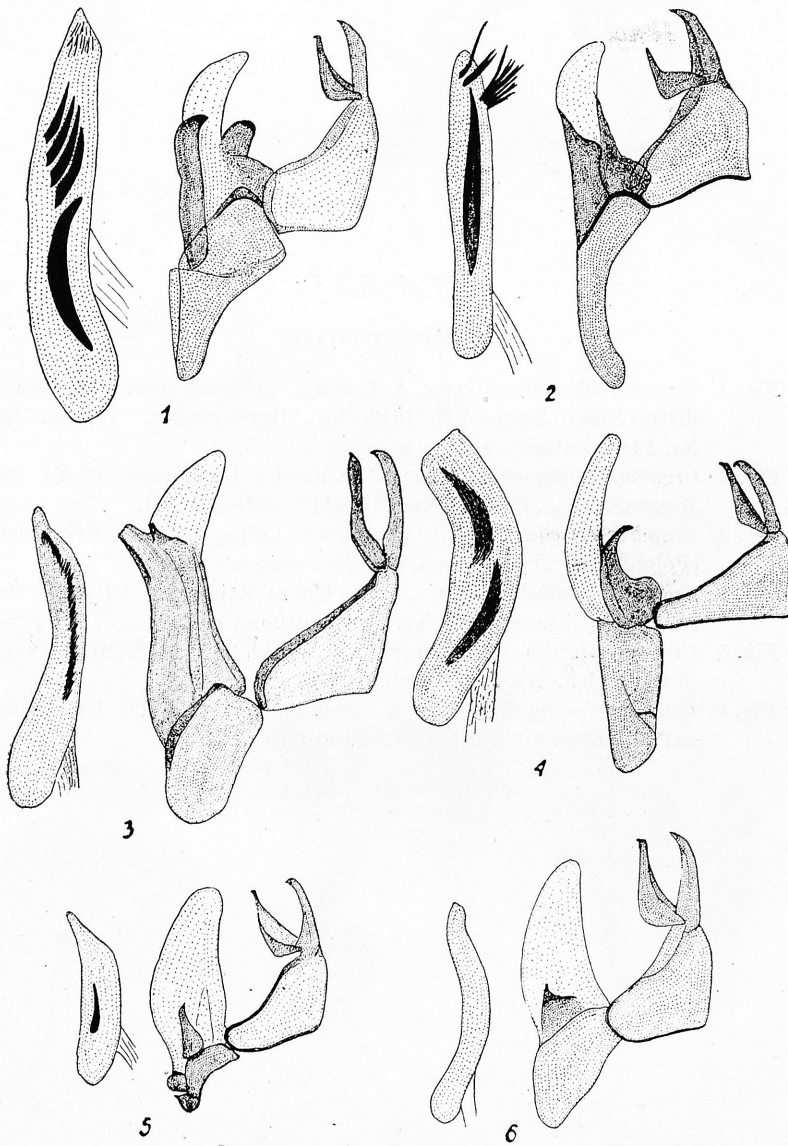


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Plate XLVIII

MALE GENITALIA

- Fig. 1. *Xanthocrambus delicatellus* (ZELL.). „Typus“, „Origin“, „Sicilia“, „*Delicatellus* n. sp.“, „ex collect. STAUDINGER“, „Praep. Gen. Cramb. Berl. Zool. Mus. Nr. 18, *Xanthocrambus delicatellus* (ZELL.) det. et praep. BLESZYŃSKI 1953“, coll. Zoological Museum of the Humboldt University in Berlin.
- Fig. 2. *Xanthocrambus occidentellus* (CAR.). „Alpes“, „Praep. Gen. Nr. 278“, author's coll.
- Fig. 3. *Xanthocrambus saxoniellus* (GERM. & ZINCK.). „Bohemia Karlsstein, Fr. CERNY, 26 VII 1943“, „Praep. Gen. Nr. 389“, author's coll.
- Fig. 4. *Chrysocrambus craterellus* (SCOP.). „Filakovo Slovensko, 27 V 1934, SCHWARZ“, „Praep. Gen. Nr. 239“, author's coll.
- Fig. 5. *Chrysocrambus sardiniellus* (TRT.). „Sardinia St. Teresa, 27 IX 1934, PREDOTA“, „Praep. Gen. Nr. 352“, author's coll.
- Fig. 6. *Chrysocrambus cassentiniellus* (ZELL.). „Rossia m. Sarepta, CHR.“, „Praep. Gen. Cramb. IZ. PAN. Nr. 39“, coll. I. Z. P. A. S., Warszawa.

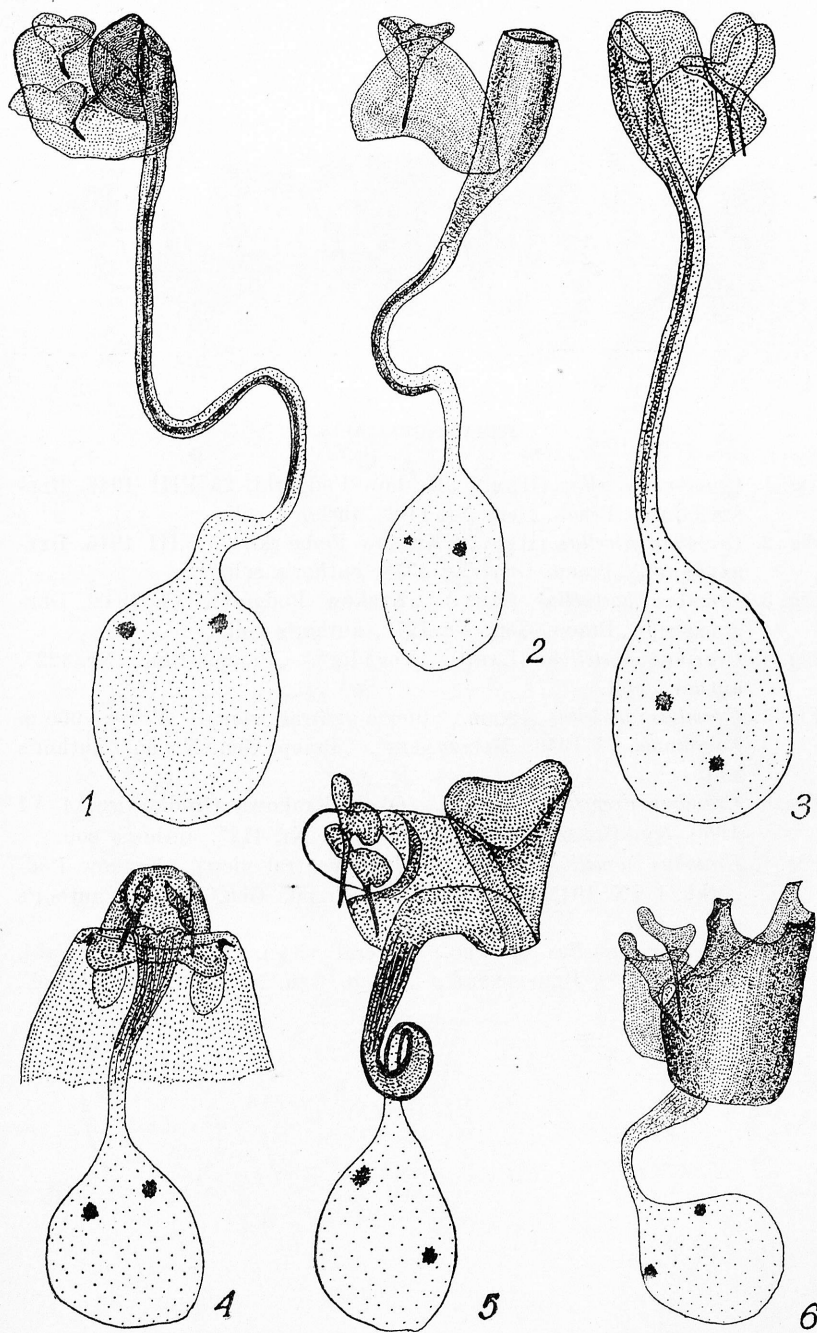


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Plate XLIX

FEMALE GENITALIA

- Fig. 1. *Crambus alienellus* (GERM. & ZINCK.). „Polonia mer. Podczerwone distr. Nowy Targ, VII 1949, leg. BŁESZYŃSKI“, „Praep. Gen. Nr. 144“, author's coll.
- Fig. 2. *Crambus uliginosellus* (ZELL.). „Katowice Muchowiec, 19 VI 1948, BŁESZYŃSKI“, „Praep. Gen. Nr. 411“, author's coll.
- Fig. 3. *Crambus ericellus* (HBN.). „Podkowa Leśna, VI 1934, ŚWIDERSKI“ [Polonia c.], „Praep. Gen. Nr. 28“, author's coll.
- Fig. 4. *Crambus pascuellus* (L.). „Tatry 900 m Zakopane, VI 1946, BŁESZYŃSKI“, „Praep. Gen. Nr. 138“, author's coll.
- Fig. 5. *Crambus pratellus* (L.). „Kraków Podgórk, 30 V 1948, BŁESZYŃSKI“, „Praep. Gen. Nr. 125“, author's coll.
- Fig. 6. *Crambus heringiellus* (H.-S.). „Poznań, 27 VII 1939, LEWANDOWSKI“, „Praep. Gen. Nr. 126“, author's coll.

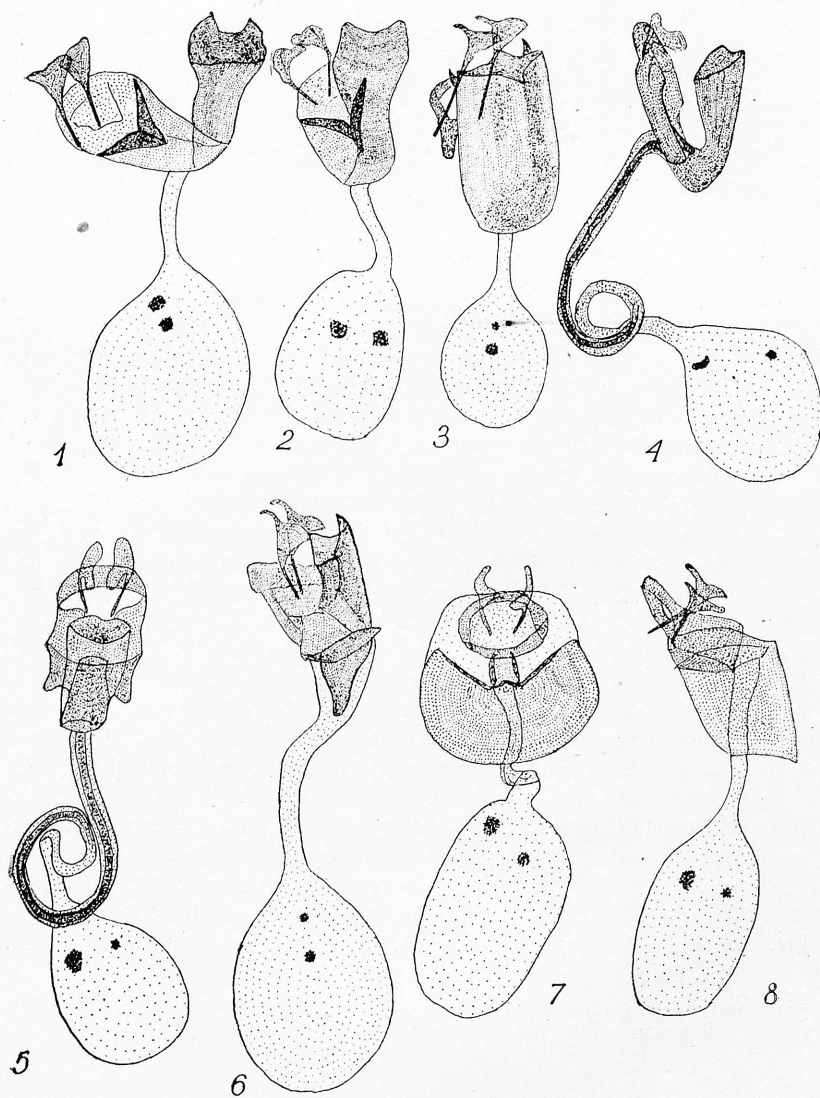


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Plate I

FEMALE GENITALIA

- Fig. 1. *Crambus silvellus* (HBN.). „Kraków Podgórkki, 25 VIII 1946, BLESZYŃSKI“, „Praep. Gen. Nr. 110“, author's coll.
- Fig. 2. *Crambus silvellus* (HBN.). „Kraków Podgórkki, 25 VIII 1946, BLESZYŃSKI“, „Praep. Gen. Nr. 137“, author's coll.
- Fig. 3. *Crambus hortuellus* (HBN.). „Kraków Podgórkki, VI 1948, BLESZYŃSKI“, „Praep. Gen. Nr. 127“, author's coll.
- Fig. 4. *Crambus rostellus* (LAH.). „Engadin“, „Praep. Gen. Nr. 322“, author's coll.
- Fig. 5. *Crambus perlellus* (SCOP.) (dorso-ventral view). „Tatry, 900 m Zakopane, VI 1946, BLESZYŃSKI“, „Praep. Gen. Nr. 65“, author's coll.
- Fig. 6. *Crambus dumetellus* (HBN.). „Okol. Krakowa Grodkowice, 4 VI 1950, leg. BLESZYŃSKI“, „Praep. Gen. Nr. 412“, author's coll.
- Fig. 7. *Crambus hamellus* (THNBG.). (dorso-ventral view). „Kraków Podgórkki, 1 IX 1945, BLESZYŃSKI“, „Praep. Gen. Nr. 98“, author's coll.
- Fig. 8. *Crambus hamellus* (THNBG.). (lateral view). „Kraków Podgórkki, 19 VIII 1950, BLESZYŃSKI“, „Praep. Gen. Nr. 416“, author's coll.

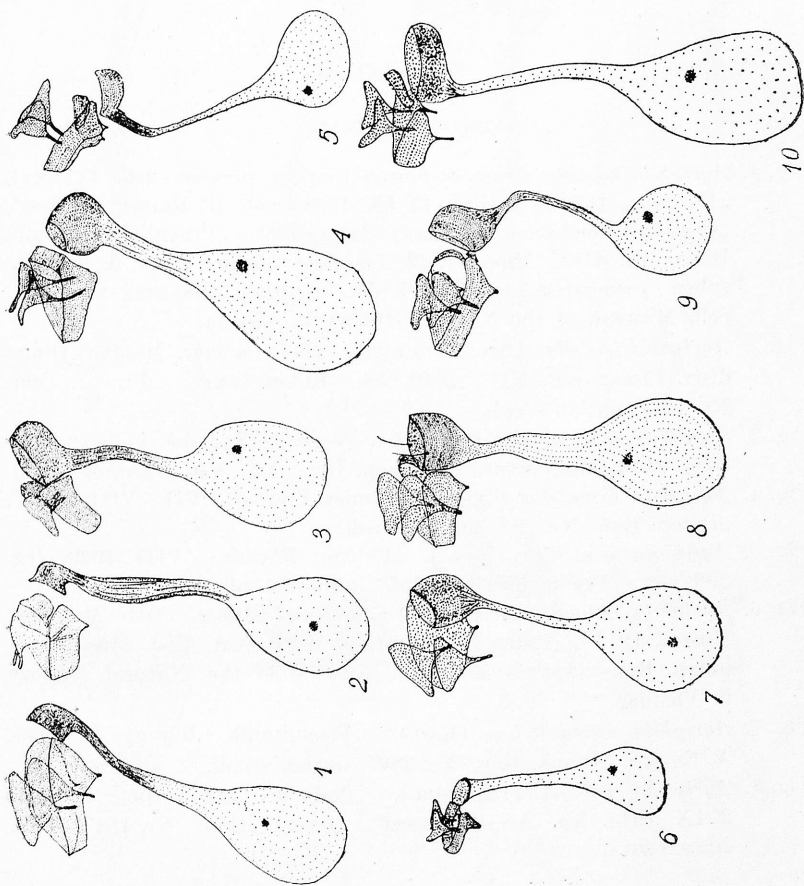


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Plate LI

FEMALE GENITALIA

- Fig. 1. *Agriphila deliella* (HBN.). „Polonia c. Puszcza Kampinoska Wydma Łuże, 23 VIII 1949, leg. BŁESZYŃSKI“, „Praep. Gen. Nr. 150“, author's coll.
- Fig. 2. *Agriphila latistria* (HAW.). „Hilversum, 20 VIII 1935, coll. C. DOETS“, „Praep. Gen. Nr. 309“, author's coll.
- Fig. 3. *Agriphila culmella* (L.). „Tatry 900 m Zakopane, 24 VII 1946, BŁESZYŃSKI“, „Praep. Gen. Nr. 149“, author's coll.
- Fig. 4. *Agriphila aeneociliella* (EVERS.). „Wólka Kozłowska distr. Radzymin, 25 VIII 1945, leg. ADAMCZEWSKI“ (Polonia c.), „Praep. Gen. Nr. 153“, author's coll.
- Fig. 5. *Agriphila trabeatella* (H.-S.). „Malta Gharghur, 8 IX 1951, coll. DELUCCA“, „Praep. Gen. Nr. 437“, author's coll.
- Fig. 6. *Agriphila biarmica* (TNGSTR.). „Fennia 1867 STGR.“, „Praep. Gen. Cramb. IZ. PAN. Nr. 35“, coll. I. Z. P. A. S., Warszawa.
- Fig. 7. *Agriphila hungarica* (SCHMIDT). „Mezőberény, SCHMIDT“, „Cotyp“, „Praep. Gen. Nr. 445“, author's coll.
- Fig. 8. *Agriphila tersella* (LED.). „Martin“, „Coll. LED.“, „Origin“, „*tersellus* LD.“, „Praep. Gen. Cramb. Berl. Zool. Mus. Nr. 13, *Agriphila tersella* (LED.) det. et praep. BŁESZYŃSKI 1953“, coll. Zoological Museum of the Humboldt University in Berlin.
- Fig. 9. *Agriphila graphella* (CONST.). „Emilia Casinalbo, 5 IX 1920, A. FIORI“, „Praep. Gen. Nr. 357“, author's coll.
- Fig. 10. *Agriphila selasella* (HBN.). „Kraków Podgórk, 25 VIII 1946, BŁESZYŃSKI“, „Praep. Gen. Nr. 147“, author's coll.

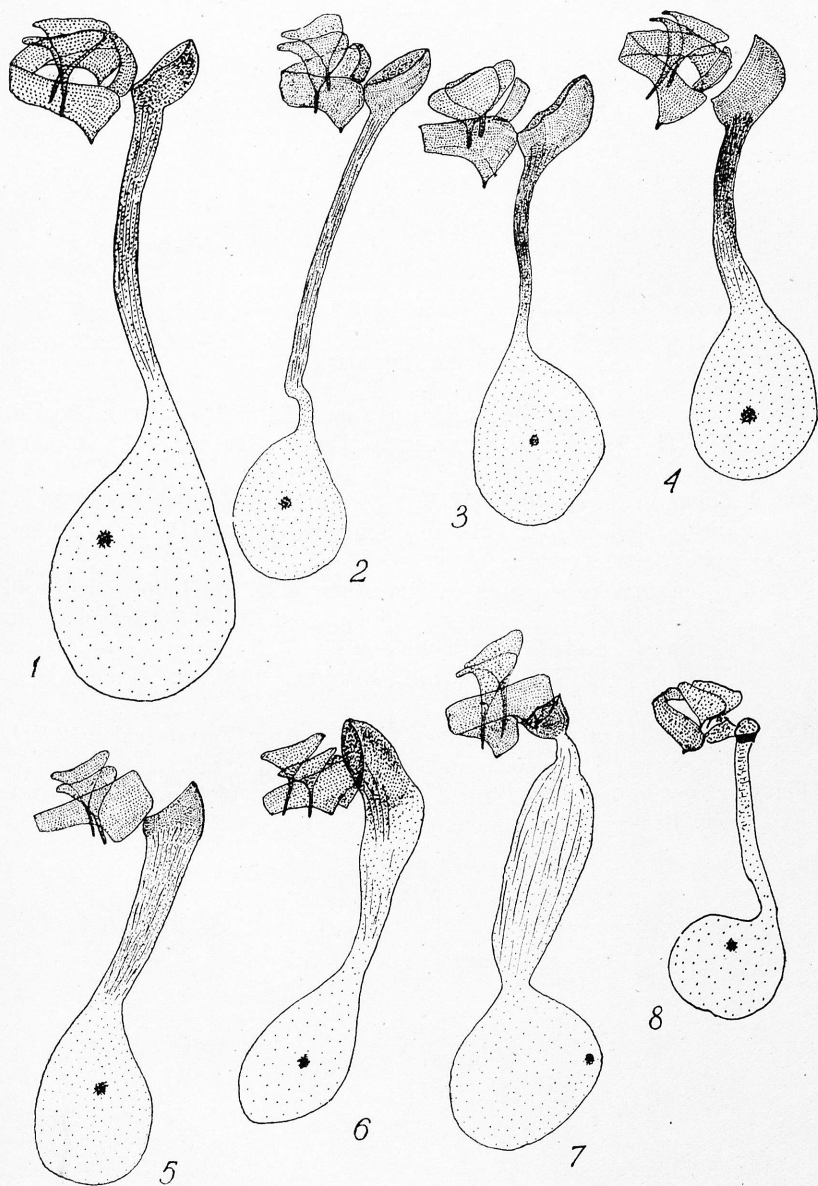


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Plate LII

FEMALE GENITALIA

- Fig. 1. *Agriphila tristella* (DEN. & SCHIFF.) subsp. *pseudotristella* (ZERNY). „Mistretta 1000 m Sicilia, 15 IX 1938, coll. H. REISSER, Wien“, „*Crambus pseudotristellus* ZERNY Paratype ♀“, „Praep. Gen. Cramb. Wien. Nat.-Hist. Mus. Nr. 23 *Agriphila tristella* (DEN. & SCHIFF.) subsp. *pseudotristella* (ZERNY), det. et praep. BLESZYŃSKI 1953“, coll. Museum of the Natural History in Vienna.
- Fig. 2. *Agriphila tristella* (DEN. & SCHIFF.). „Polonia mer. Mszana Dolna distr. Limanowa, VIII 1949, leg. BLESZYŃSKI“, „Praep. Gen. Nr. 141“, author's coll.
- Fig. 3. *Agriphila inquinatea* (DEN. & SCHIFF.). „Kraków Podgórk. 19 VIII 1946, BLESZYŃSKI“, „Praep. Gen. Nr. 146“, author's coll.
- Fig. 4. *Agriphila brioniella* (ZERNY). „Roma Frascati, VII—VIII 1943“, „Praep. Gen. Nr. 78“, author's coll.
- Fig. 5. *Agriphila genicula* (HAW.). „Ustroń Równica, VIII 1939, leg. S. TOLL“, „Praep. Gen. Nr. 157“, author's coll.
- Fig. 6. *Agriphila dalmatinella* (HMPs.) ssp. *beieri* BLESZ. „Otto Mesopot. Mossul, 1917“, „Praep. Gen. Cramb. Wien. Nat. Hist. Mus. Nr. 8, praep. BLESZYŃSKI 1953“, coll. Museum of the Natural History in Vienna.
- Fig. 7. *Agriphila cyrenaicella* (RAG.). „Tripolitania Jefren, X 1935, A. FIORI“, „Praep. Gen. Nr. 388“, author's coll.
- Fig. 8. *Agriphila poliella* (TREITSCH.). „Podkowa Leśna distr. Blonie, 2 IX 1945, leg. ADAMCZEWSKI“, „Praep. Gen. Nr. 151“, coll. BLESZYŃSKI.

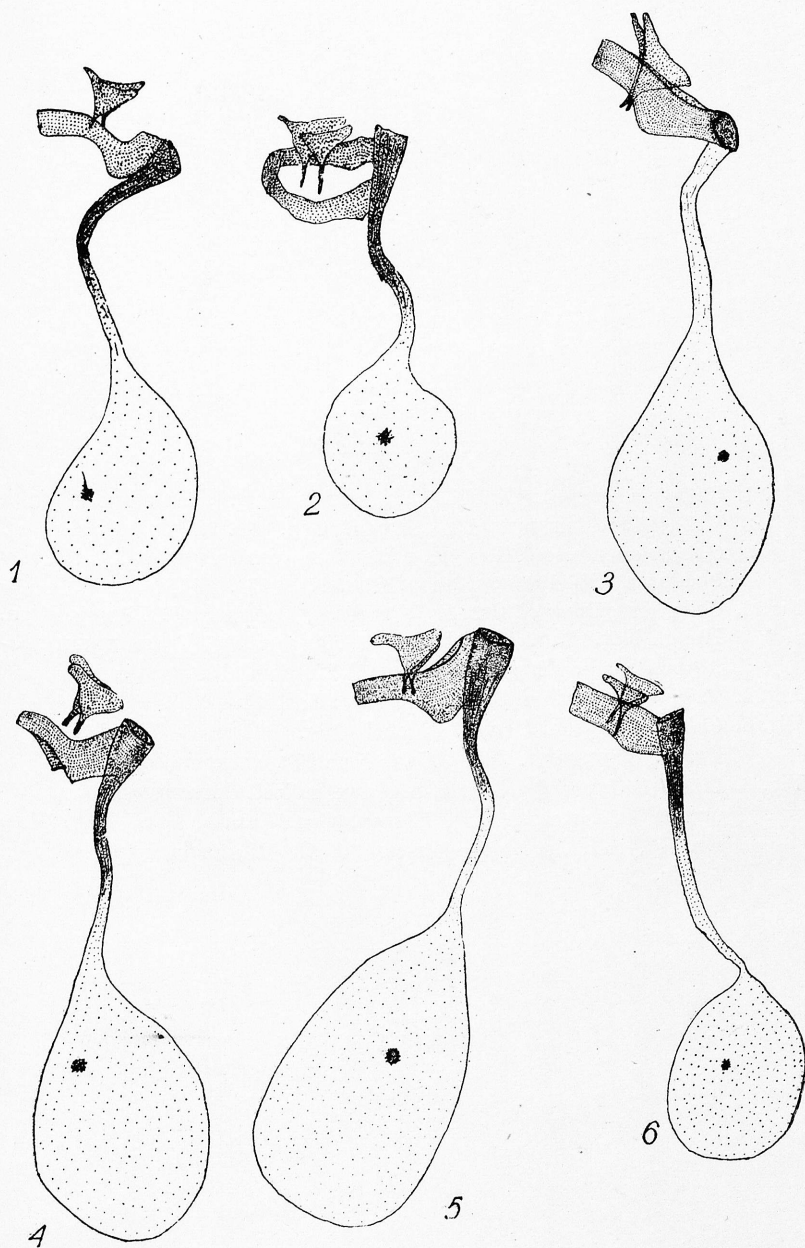


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Plate LIII

FEMALE GENITALIA

- Fig. 1. *Catoptria radiella* (HBN.). „Polonia mer. Tatry Mts. 2000 m Beskid, 27 VII 1946, leg. BLESZYŃSKI“, „Praep. Gen. Nr. 477“, author's coll.
- Fig. 2. *Catoptria intermediella* (M.-R.). „Alpes Maritimes St. Martin Vesubie“, „Madonna di Finestre, SCHMIDT, 1925 VIII 17“, „Praep. Gen. Nr. 478“, author's coll.
- Fig. 3. *Catoptria bolivari* (AGENJO). „Cambasagne H. P. [Hautes Pyrenées], 31 VII 1950, G. T. ADKIN“, „Praep. Gen. Nr. 391“, author's coll.
- Fig. 4. *Catoptria conchella* (DEN. & SCHIFF.). „Rainkopf Crête Vosges Ht.-Rhin, 19 VII 1949, coll. FISCHER, 1300 m“, „Praep. Gen. Nr. 431“, author's coll.
- Fig. 5. *Catoptria pauperella* (TREITSCH.). „Czarnohora Foreszczenka, 12 VII, leg. STACH“, „Praep. Gen. Nr. 155“, author's coll.
- Fig. 6. *Catoptria maculalis* (ZETT.). „Tatry Pyszna, 1600 m, 26 VII 1949, leg. BLESZYŃSKI“, „Praep. Gen. Nr. 118“, author's coll.

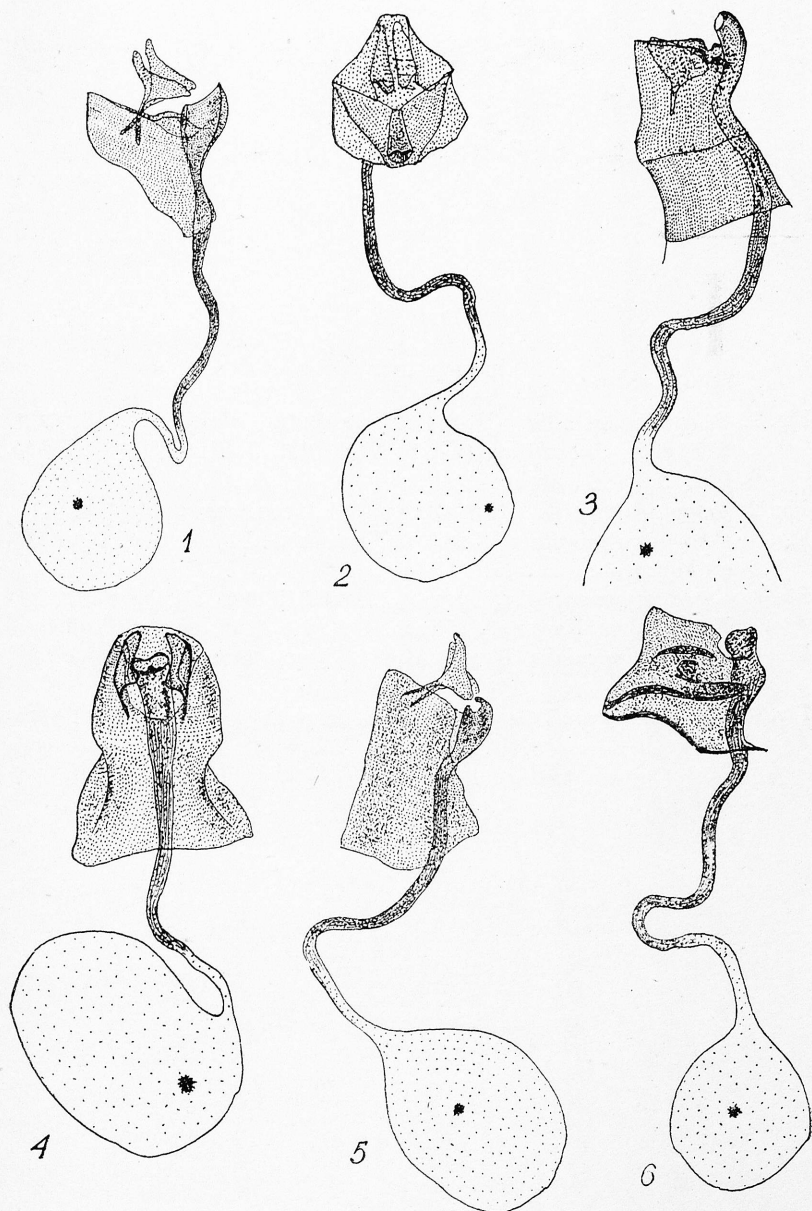


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Plate LIV

FEMALE GENITALIA

- Fig. 1. *Catoptria permutatella* (H.-S.). (lateral view). „Kraków Podgórk, VII 1949, BŁESZYŃSKI“, „Praep. Gen. Nr. 227“, author's coll.
- Fig. 2. *Catoptria permutatella* (H.-S.). (dorso-ventral view). „Kraków Podgórk, VII 1949“, „Praep. Gen. Nr. 227“, author's coll.
- Fig. 3. *Catoptria gozmányi* BLESZ. „Retyézat, DIÓSZEGHY“, „Praep. Gen. Hung. Nat. Mus. Nr. 4“, „*Catoptria gozmányi* BŁESZYŃSKI paratypus“, coll. Hungarian National Museum, Budapest.
- Fig. 4. *Catoptria gozmányi* BLESZ. (dorso-ventral view).
- Fig. 5. *Catoptria myella* (HBN.). Kochel Oby. 600 m, 5 VII 1947, leg. Dr. H. WAGNER“, „Praep. Gen. Nr. 229“, author's coll.
- Fig. 6. *Catoptria acutangulella* (H.-S.). „ex collect. STAUDINGER“, „Dalmatien“, „*acutangulella*“, „Praep. Gen. Cramb. Berl. Zool. Mus. Nr. 17“, coll. Zoological Museum of the Humboldt University in Berlin.

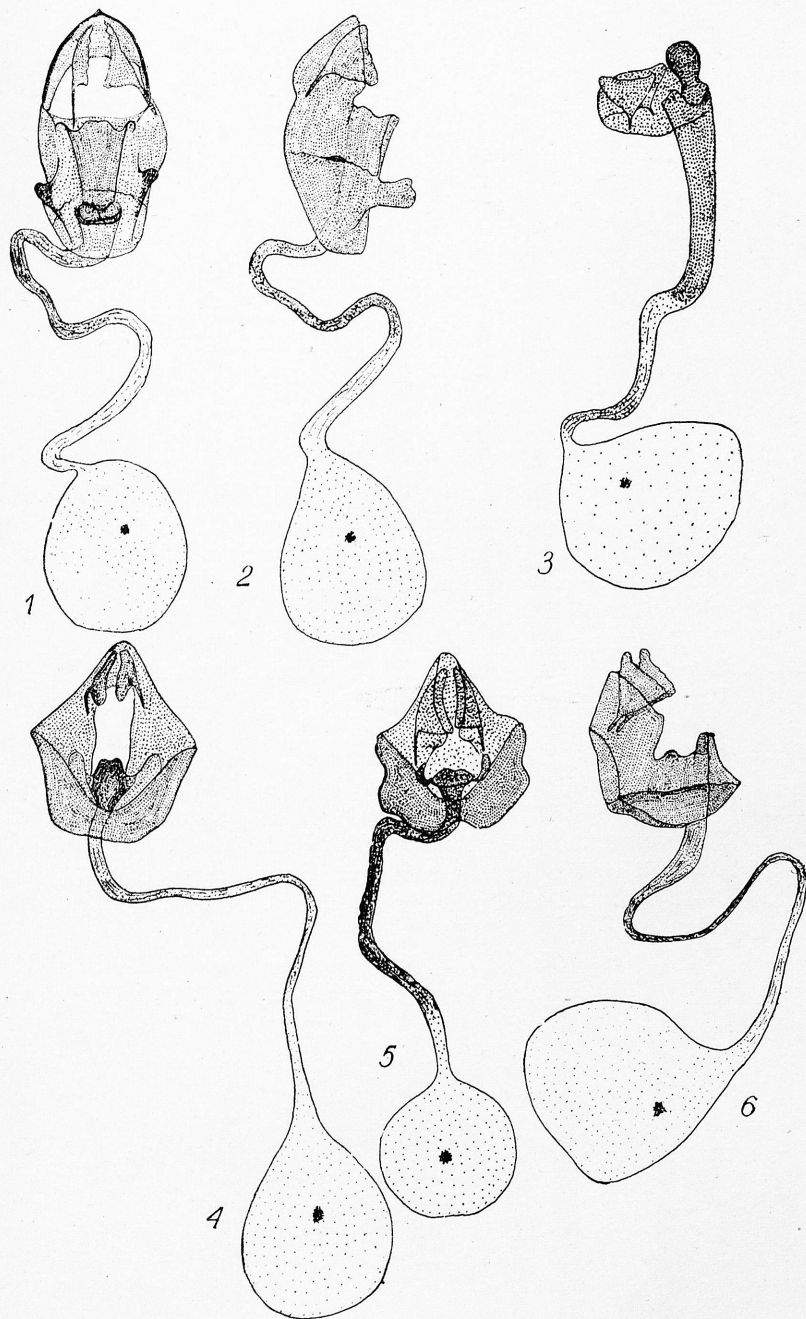


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Plate LV

FEMALE GENITALIA

- Fig. 1. *Catoptria luctuella* (H.-S.) (dorso-ventral view). „Tirol Stubai 2500 m m Hoher Burgstall, 16 VIII 1941, J. KLIMESCH“, „Praep. Gen. Nr. 381“, author's coll.
- Fig. 2. *Catoptria luctuella* (H.-S.) Praep. 381 lateral view.
- Fig. 3. *Catoptria laevigatella* (LED.). „Caucasus“, „Praep. Gen. Nr. 484“, author's coll.
- Fig. 4. *Catoptria pyramidella* (TREITSCH.). „14 VII 1949, 1700 m Klagenfurt Karawanken Kärnten“, „Praep. Gen. Nr. 387“, author's coll.
- Fig. 5. *Catoptria speculalis* HBN. „Alpes“, „Praep. Gen. Nr. 53“, author's coll.
- Fig. 6. *Catoptria pyramidella* (TREITSCH.). Praep. 387 in dorso-ventral view.

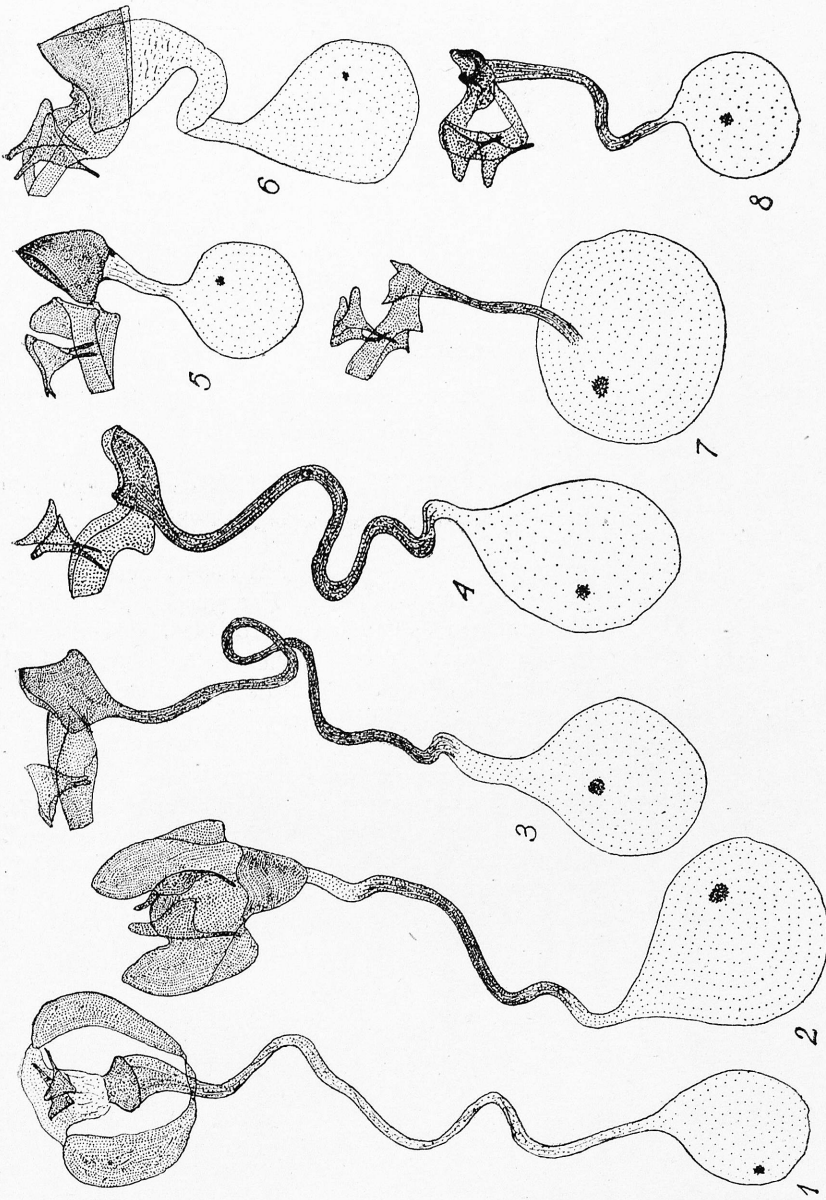


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Plate LVI

FEMALE GENITALIA

- Fig. 1. *Catoptria spatulella* (TRT.). „Reggio Emilia Gabellina, 5 VII 1931, A. FIORI“, „Praep. Gen. Nr. 400“, author's coll.
- Fig. 2. *Catoptria osthelderi* (DE LATTIN). „Polonia mer. distr. Oświęcim, 16 VII 1948, leg. BŁESZYŃSKI“, „Praep. Gen. Nr. 433“, author's coll.
- Fig. 3. *Catoptria mytilella* (HBN.). „Jarov, 14 VII 1941 Cechy (Bohemia) DR. R. SCHWARZ“, „Praep. Gen. Nr. 399“, author's coll.
- Fig. 4. *Catoptria aetnella* (ZERNY). „Sizil. Aetna 1000—2000 m, 8—17 VIII 1938. SCHWINGENSCHUSS“, „*Crambus aetnellus* ZERNY“, „Praep. Gen. Nr. 467“, author's coll.
- Fig. 5. *Catoptria margaritella* (DEN. & SCHIFF.). „Okol. Krakowa Grodkowice, VI 1947, BŁESZYŃSKI“, „Praep. Gen. 135“, author's coll.
- Fig. 6. *Catoptria fulgidella* (HBN.). „Kraków Podgórk, 25 VIII 1946, BŁESZYŃSKI“, „Praep. Gen. Nr. 418“, author's coll.
- Fig. 7. *Catoptria pinella* (L.). „Ascou le Pujal Axles Thermes Ariège 1400 m, 6—12 VII 1950, coll. CH. FISCHER“, „Praep. Gen. Nr. 432“, author's coll.
- Fig. 8. *Catoptria corsicella* (DUP.). „Corsica col de Vergio 1460 m, 21 VIII 1932 coll. H. REISSER, Wien“, „Praep. Gen. Nr. 458“, author's coll.

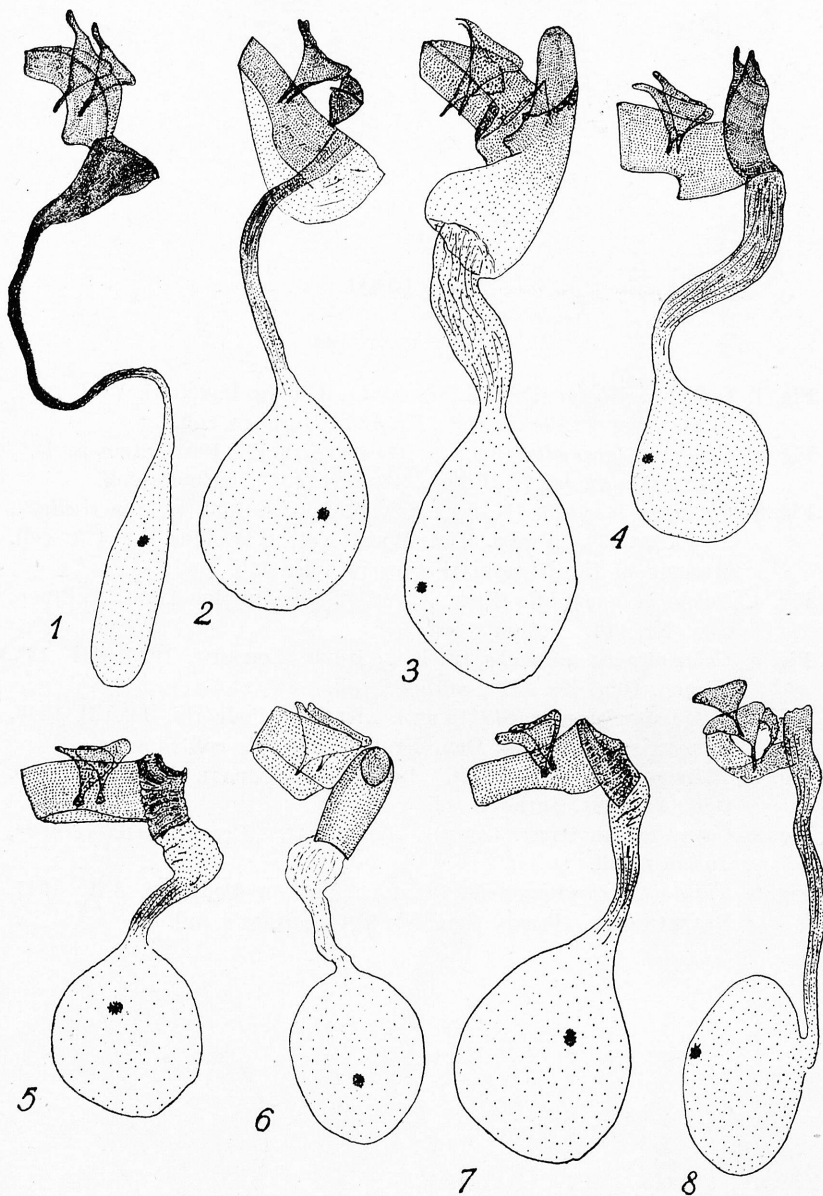


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Plate LVII

FEMALE GENITALIA

- Fig. 1. *Catoptria furcatella* (ZETT.). „Polonia mer. Tatry Mts. 2000 m Liljowe, VII 1950 leg. BLESZYŃSKI“, „Praep. Gen. Nr. 164“, author's coll.
- Fig. 2. *Catoptria zermattensis* (FREY). „FREY coll. 1890“, „Exchange from the B. M. (N.-H.)“, „Praep. Gen. Nr. 398“, author's coll.
- Fig. 3. *Catoptria digitella* (H.-S.). „Gaédre, 13 VIII 1896“, „Coll. J. & L. DE JOANNIS Museum Paris“, „Praep. Gen. Nr. 385“, author's coll.
- Fig. 4. *Catoptria lythargyrella* (HBN.). „Puszcza Kampinoska [Polonia c.], 28 VIII 1936, ŚWIDERSKI“, „Praep. Gen. Nr. 148“, author's coll.
- Fig. 5. *Catoptria coultonella* (Dup.). „Tatry 1300 m Mała Świnica, 23 VI 1950, leg. BLESZYŃSKI“, „Praep. Gen. Nr. 208“, author's coll.
- Fig. 6. *Catoptria orientella* (H.-S.). „Siebenbürg. Alpen Wo. 66. Coll. MÖSCHL.“, „Praep. Gen. Cramb. Berl. Zool. Mus. Nr. 5“, coll. Zoological Museum of the Humboldt University in Berlin.
- Fig. 7. *Catoptria combinella* (DEN. & SCHIFF.). „Kochel Oberbayern 700 m, 20 VII 1943, OSTHELDER“, „Praep. Gen. Nr. 206“, author's coll.
- Fig. 8. *Catoptria verella* (GERM. & ZINCK.). „Ville (B.-R.), 5 VII 1932“, „Museum Paris don DE UNGEMACH“, „Praep. Gen. Nr. 393“, author's coll.

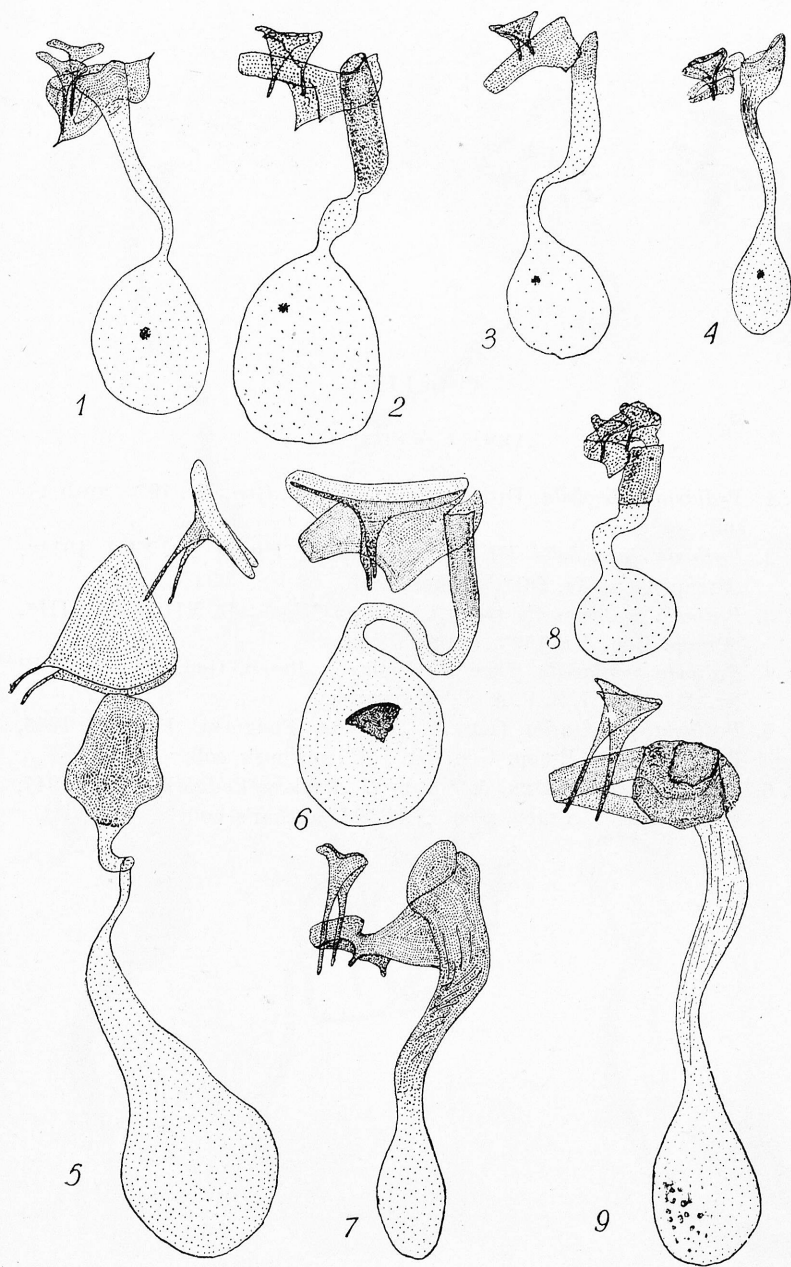


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Plate LVIII

FEMALE GENITALIA

- Fig. 1. *Catoptria falsella* (DEN. & SCHIFF.). „Kraków Podgórk, VIII 1947, BŁESZYŃSKI“, „Praep. Gen. Nr. 136“, author's coll.
- Fig. 2. *Catoptria confusella* (STGR.). „Gaisberg, 8 IX 1907, Stein a. D.“, „PREISSÄCKER leg.“, „Praep. Gen. Nr. 451“, author's coll.
- Fig. 3. *Catoptria incertella* (H.-S.). „STAUD. Caucas. 1882 V“, „*incertellus*“, „1 IX“, „93“, „Praep. Gen. Wien. Nat. Hist. Mus. Nr. 11“, coll. Museum of the Natural History in Vienna.
- Fig. 4. *Catoptria languidella* (ZELL.). „1883 Wallis Simplon ADGG.“, „Praep. Gen. Nr. 446“, author's coll.
- Fig. 5. *Calamotropha aureliella* (F.-R.). „Hêviz, SCHMIDT, 1933 VII 13“, „Praep. Gen. Nr. 351“, author's coll.
- Fig. 6. *Calamotropha paludella* (HBN.). „Kraków Podgórk, 14 VII 1946, BŁESZYŃSKI“, „Praep. Gen. Nr. 97“, author's coll.
- Fig. 7. *Thisanotia lucella* (H.-S.). „Lombardia, TURATI, 1892“, * „Praep. Gen. Nr. 429“, author's coll.
- Fig. 8. *Catoptria staudingeri* (ZELL.). „Soalheira“, „Praep. Gen. Nr. 499“, author's coll.
- Fig. 9. *Thisanotia chrysonuchella* (SCOP.). „Kraków Podgórk, 3 V 1947, BŁESZYŃSKI“, „Praep. Gen. Nr. 380“, author's coll.

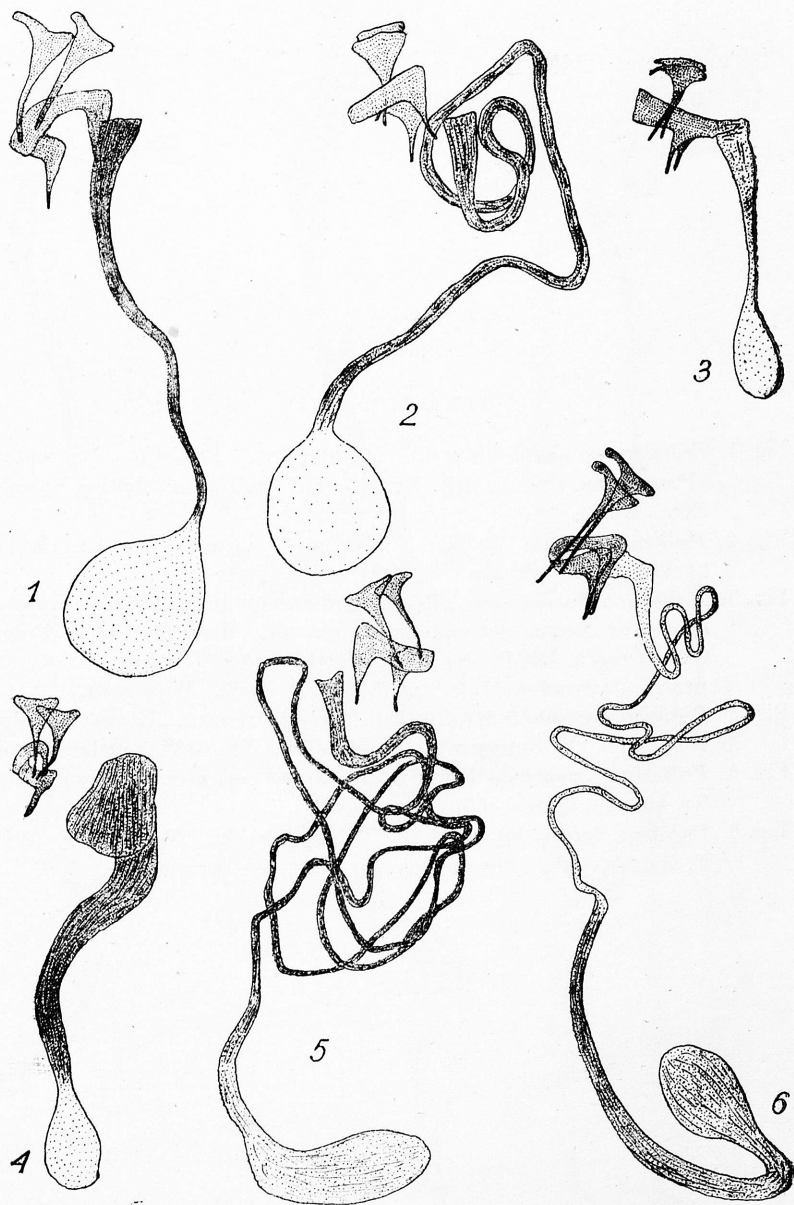


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Plate LIX

FEMALE GENITALIA

- Fig. 1. *Pediasia pedriolella* (DUP.). „Alps“, „Praep. Gen. Nr. 197“, author's coll.
- Fig. 2. *Pediasia jucundella* (H.-S.). „Budapest, UHRİK 20 VIII 1911“, „Praep. Gen. Nr. 261“, author's coll.
- Fig. 3. *Pediasia contaminella* (HBN.). „Rossia Mińsk, 15 VII — 15 VIII“, „Praep. Gen. Nr. 152“, author's coll.
- Fig. 4. *Pediasia subflavella* (DUP.). „Corsica“, „Praep. Gen. Cramb. MZP Nr. 27“, coll. I. Z. P. A. S., Warszawa.
- Fig. 5. *Pediasia fascelinella* (HBN.). „Kraków Podgórk, 17 VII 1946, BŁESZYŃSKI“, „Praep. Gen. Nr. 154“, author's coll.
- Fig. 6. *Pediasia luteella* (DEN. & SCHIFF.). „Kraków Podgórk, 29 V 1947, BŁESZYŃSKI“, „Praep. Gen. Nr. 159“, author's coll.

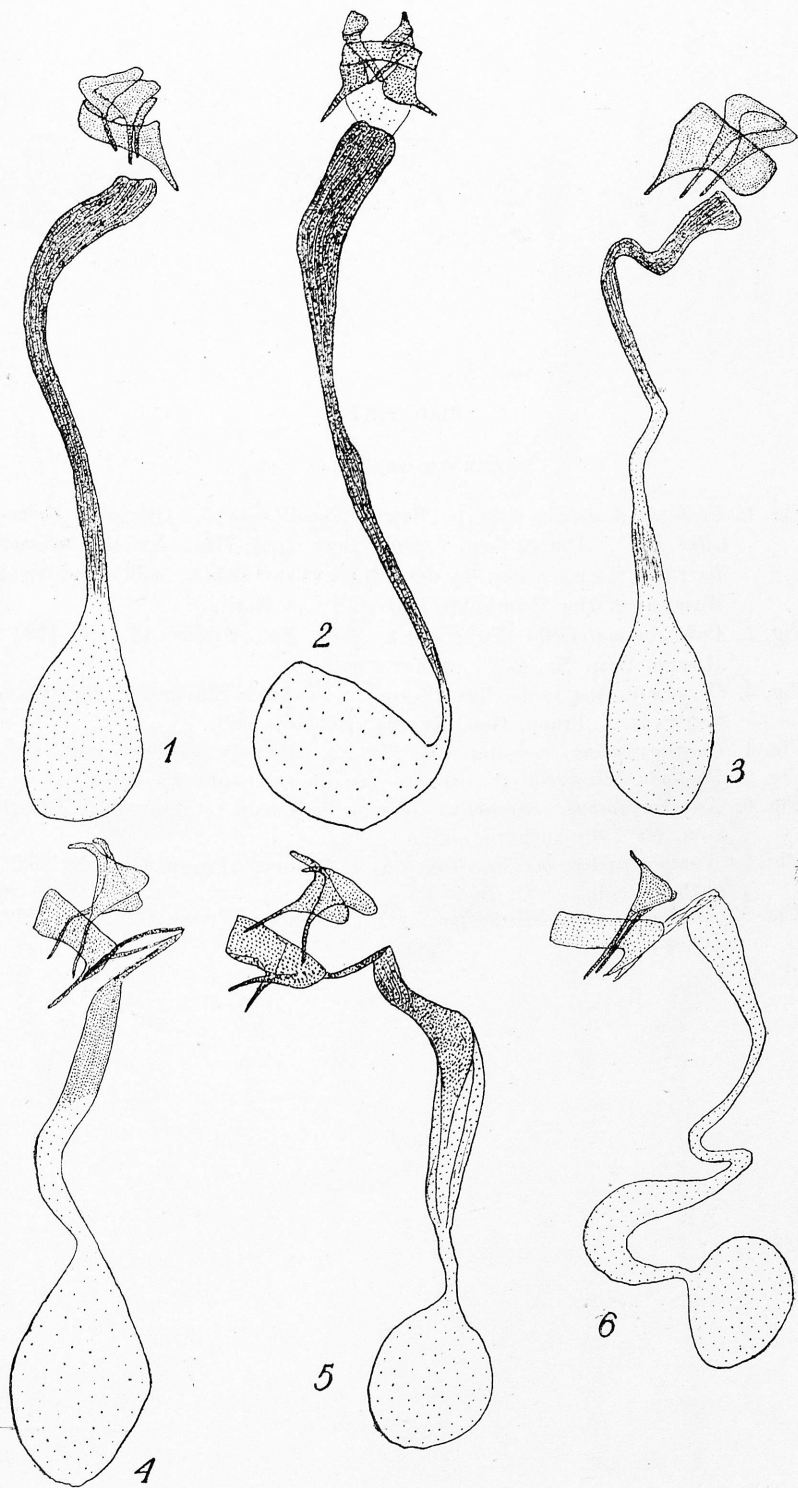


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Plate LX

FEMALE GENITALIA

- Fig. 1. *Pediasia epineura* (MEYR.). „CHRISTOPH, *Festivellus*, Sarepta“, „Praep. Gen. Cramb. Brit. Mus. (N.-H.) Nr. 2“, coll. British Museum (Nat. Hist.).
- Fig. 2. *Pediasia soffneri* BLESZ. „Allotypus“, „Rossia mer. Gorlovka, 24 VII 1943“, „Praep. Nr. 1791“, coll. Toil.
- Fig. 3. *Pediasia hübnéri* BLESZ. „Rossia mer. Sarepta, CHR. 1866“, „*Crambus epineurus* MEYR. determ. trans. ex coll. Mus. Stettin“, „Praep. Gen. Cramb. MZP. Nr. 22 *Pediasia hübnéri* BLESZ. Allotypus, praep. BLESZYŃSKI 1950“, coll. I. Z. P. A. S., Warszawa.
- Fig. 4. *Pediasia squalidalis* HBN. subsp. *nepos* (ROTSCH.). „K. Szt. Miklós, 1918 VIII 30 SCHMIDT“, „Praep. Gen. Nr. 313“, author's coll.
- Fig. 5. *Pediasia* ? *monotona* (FILIPJEW). „Rossia oc.-mer.“, „Praep. Gen. Nr. 465“, author's coll.
- Fig. 6. *Pediasia truncatella* (ZETT.). „Tb Pyhähäkki, 26—29 VI 1947, F. HACKMANN“, „Praep. Gen. Nr. 328“, author's coll.

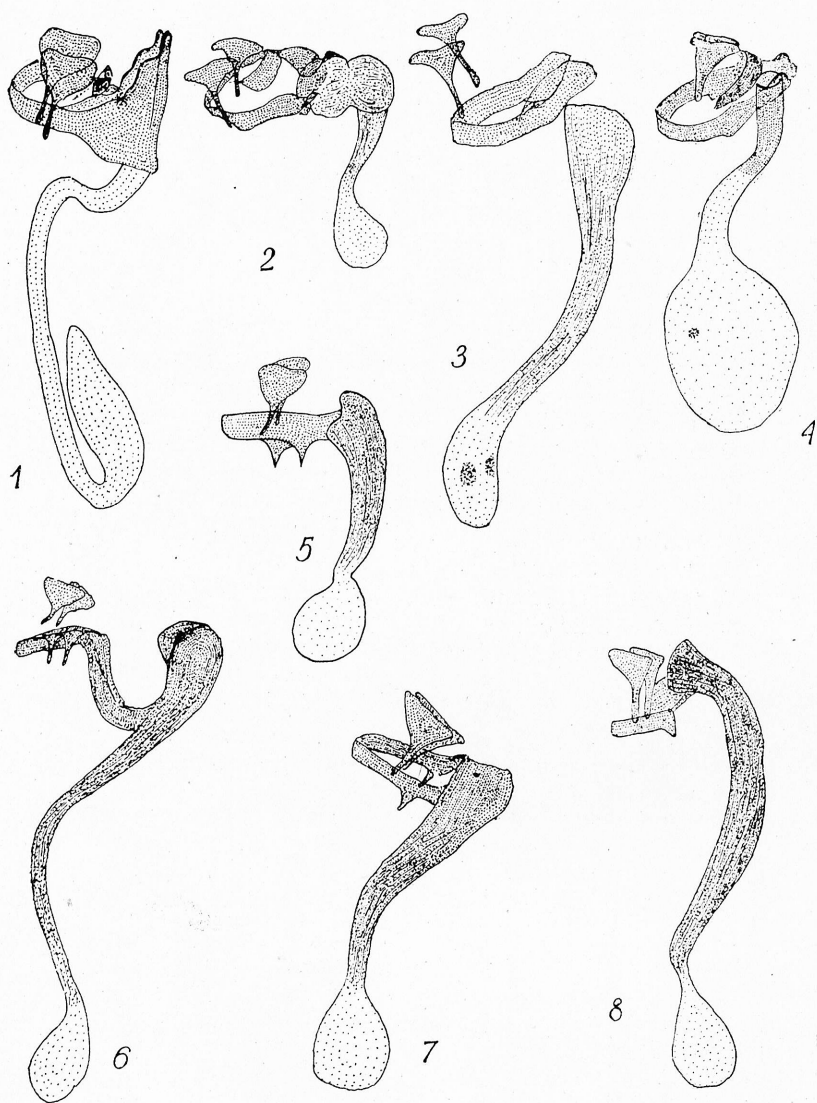


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Plate LXI

FEMALE GENITALIA

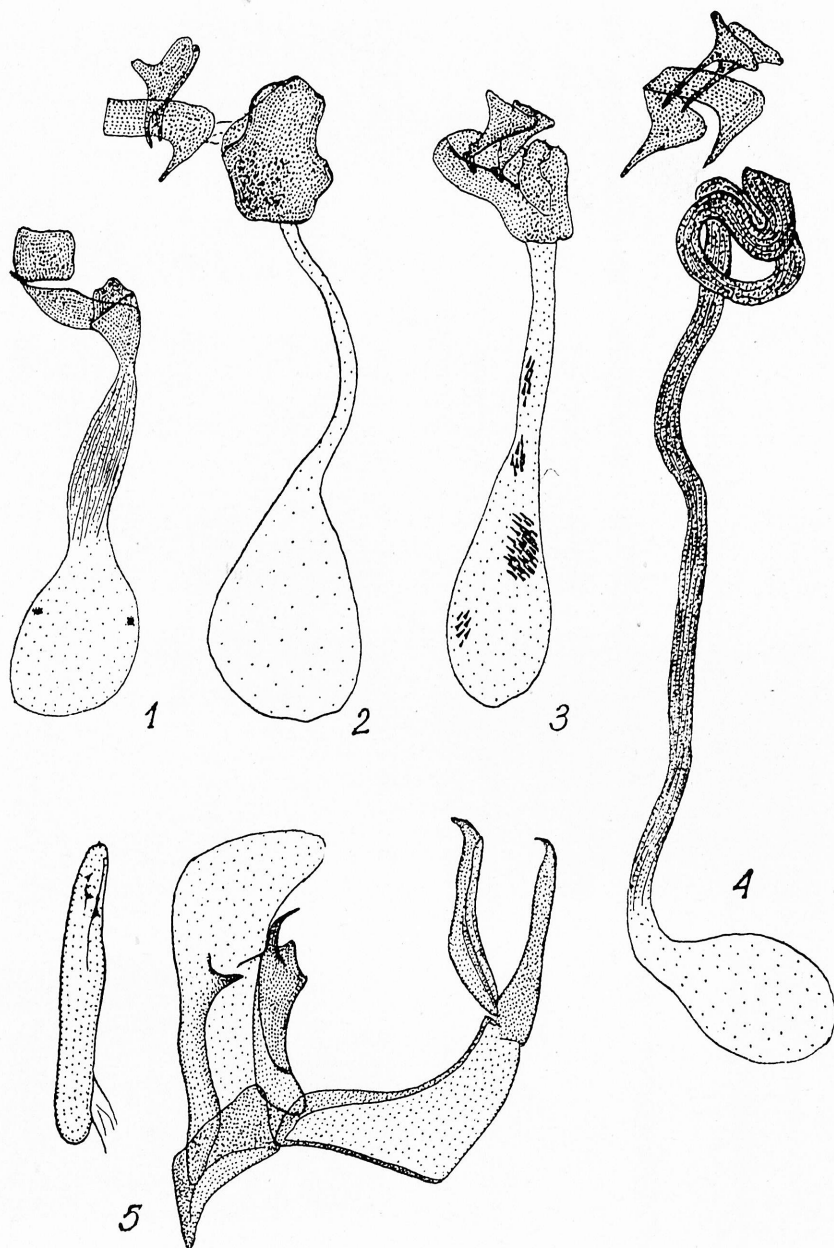
- Fig. 1. *Pediasia desertella* (LED.). „Beirut“, „coll. LED.“, „Origin“, „*desertellus* LD.“, „Praep. Gen. Cramb. Berl. Zool. Mús. Nr. 13 *Pediasia desertella* (LED.) praep. et det. BLESZYŃSKI 1953“, coll. Zoological Museum of the Humboldt University in Berlin.
- Fig. 2. *Pediasia matricella* (TREITSCH.). „Kun. Szt. Miklós, 13 IX 1921“ „Praep. Gen. Nr. 434“, author's coll.
- Fig. 3. *Chrysocrambus craterellus* (SCOP.). „Filakovo Slovensko, 25 v 1934, SCHWARZ“, „Praep. Gen. Nr 424“ author's coll.
- Fig. 4. *Chrysocrambus cassentiniellus* (ZELL.). Slovenia, author's coll.
- Fig. 5. *Pediasia bolivarella* (SCHMIDT). „Soalheira“, author's coll.
- Fig. 6. *Xanthocrambus saxonellus* (GERM. & ZINCK.). Bohemia, „Praep. Gen. Nr 251“ author's coll.
- Fig. 7. *Xanthocrambus occidentellus* (CAR.). France, „Praep. Gen. Nr 252“, author's coll.
- Fig. 8. *Xanthocrambus delicatellus* (ZELL.). France, „Praep. Gen. Nr 250“, author's coll.



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Plate LXII

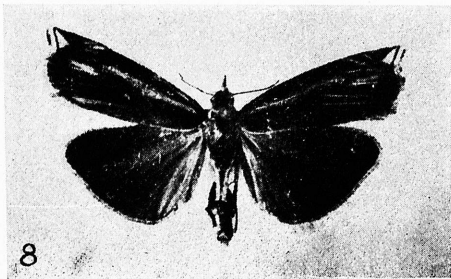
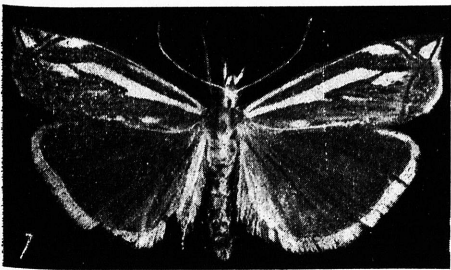
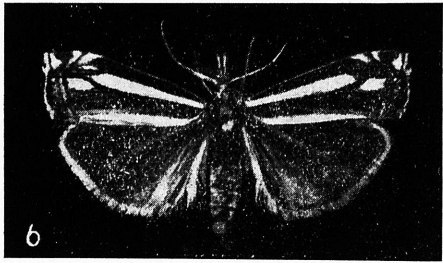
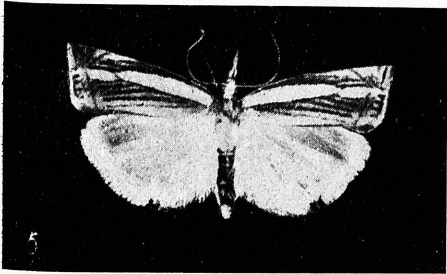
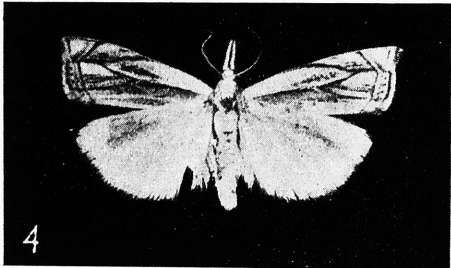
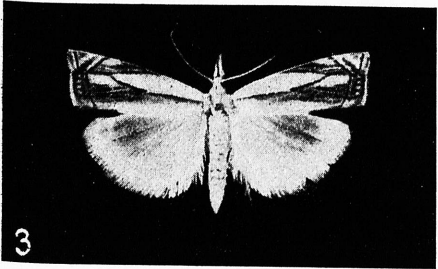
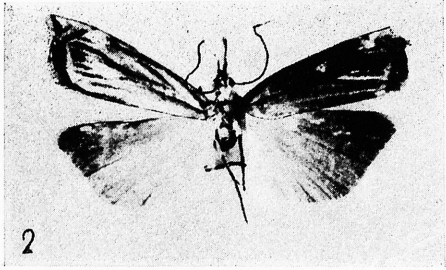
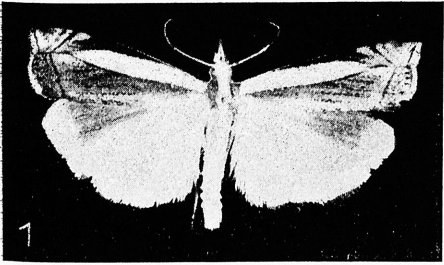
- Fig. 1. Female genitalia. *Crambopsis malacellus* (DUP.) „Courthézon près Orange Vaucluse, IX 1951, coll. CH. FISCHER“, author's coll.
- Fig. 2. Female genitalia *Mesocrambus candiellus* (H.-S.). Albania, VI 1952, coll. R. WOJTUSIAK.
- Fig. 3. Female genitalia. *Metacrambus carectellus* (ZELL.). „Rossia mer.“, author's coll.
- Fig. 4. Female genitalia. *Pediasia saisanella* BLESZ. Crimea. Coll. H. G. AMSEL.
- Fig. 5. Male genitalia. *Catoptria caucasica* (ALPH.). „Caucasus sept. leg. ALPH[ERAKY]“, „Paratype“, coll. Zoological Museum of the Humboldt University in Berlin.



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Plate LXIII

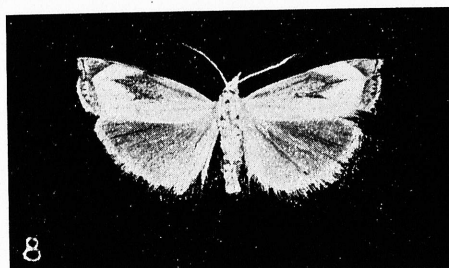
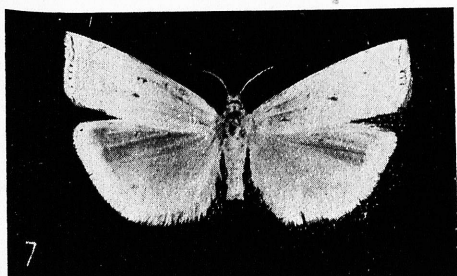
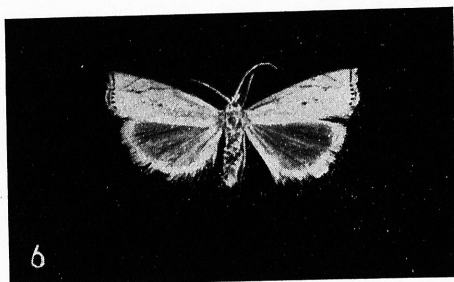
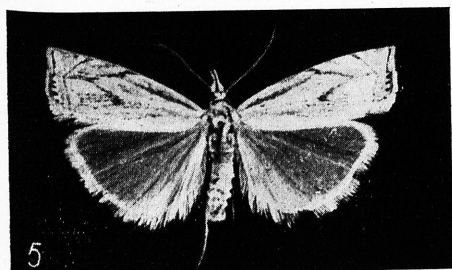
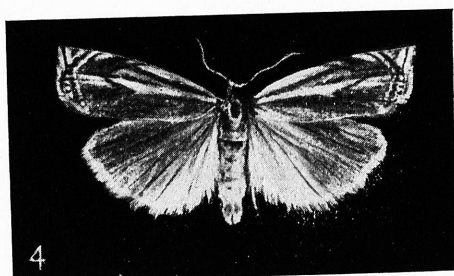
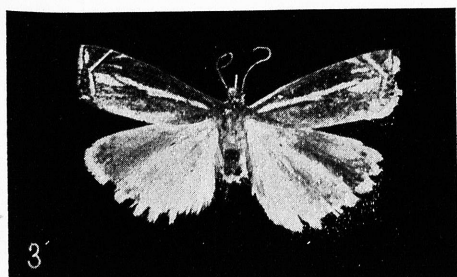
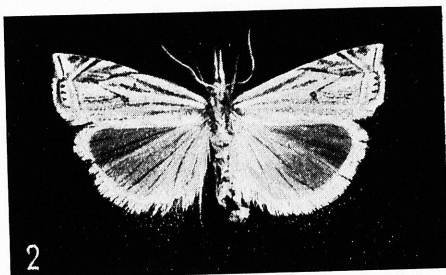
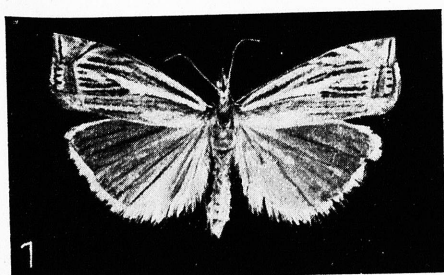
- Fig. 1. *Crambus pascuellus* (L.) ♂. „Polonia mer. Dulowa distr. Chrzanów, 19 VI 1949, leg. BŁESZYŃSKI“, author's coll.
- Fig. 2. *Crambus pascuellus* (L.) subsp. *funipalpellus* MANN ♂. „Ped. GIANNELLI“, „*Crambus acutulellus* CHRÉTIEN“, coll. Museum of the Natural History in Vienna.
- Fig. 3. *Crambus uliginosellus* ZELL. ♂. „Polonia mer. Dulowa distr. Chrzanów, 8 VI 1950, leg. BŁESZYŃSKI“, author's coll.
- Fig. 4. *Crambus uliginosellus* ZELL. ♂. „Styria Seitzthal Moor, 2 VII 1947, J. KLIMESCH“, author's coll.
- Fig. 5. *Crambus silvellus* (HBN.) ♂. „Kraków Podgórk, 18 VIII 1948, BŁESZYŃSKI“, author's coll.
- Fig. 6. *Crambus ericellus* (HBN.) ♂. „Polonia mer. Krynica Jaworzyna 1100 m, 13 VI 1950“, author's coll.
- Fig. 7. *Crambus dumetellus* (HBN.) ♂. „Polonia mer. Tatry 1100 m Hala Ornak, 9 VII 1951, leg. BŁESZYŃSKI“, author's coll.
- Fig. 8. *Crambus dumetellus* (HBN.) *plumbatellus* OSH. ♀. „Bav. alp. Kochel 600 m Moos, 23 VI 1949, L. OSTHELDER leg.“, author's coll.



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Plate LXIV

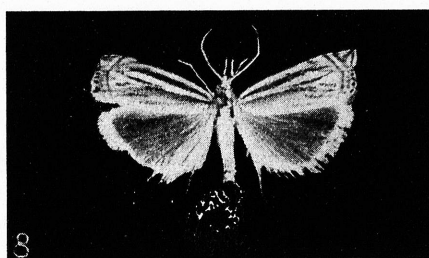
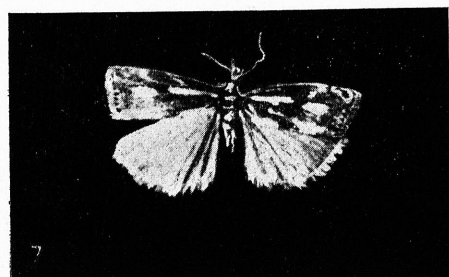
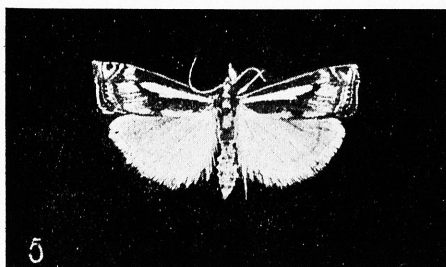
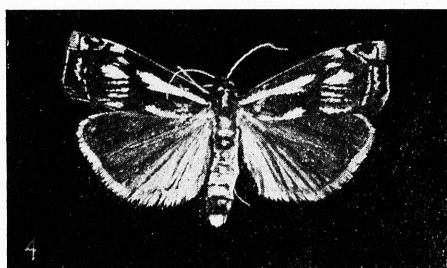
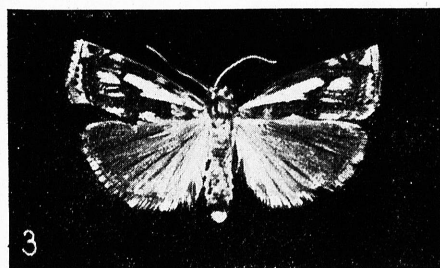
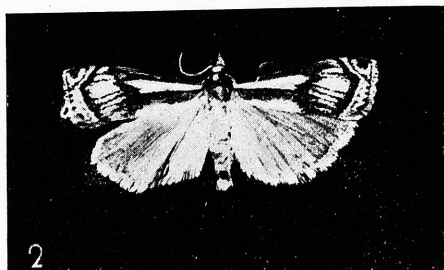
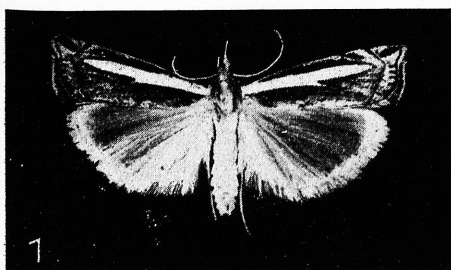
- Fig. 1. *Crambus pratellus* (L.) ♂. „Woj. Kraków Dulowa, 31 V 1950, BŁESZYŃSKI“, author's coll.
- Fig. 2. *Crambus pratellus* (L.) ♂. „Sallanches et environs Ht. Savoie 3—25 VI 1950, 10—1400 m, coll. CH. FISCHER“, author's coll.
- Fig. 3. *Crambus pratellus* (L.) ♂. „Lepinmore Argyll, 30 V 1951, E. C. P.-C. No. 5448“, author's coll.
- Fig. 4. *Crambus pratellus* (L.) ♂. „Polonia mer. Dulowa distr. Chrzanów, 6 VI 1951, leg. BŁESZYŃSKI“, author's coll.
- Fig. 5. *Crambus pratellus* (L.) ♀. „Polonia mer. Krynica, 600 m, 12 VI 1950, leg. BŁESZYŃSKI“, author's coll.
- Fig. 6. *Crambus pratellus* (L.) ♀. „Kraków Podgórk, 28 V 1950, BŁESZYŃSKI, author's coll.
- Fig. 7. *Crambus pratellus* (L.) subsp. *alfacarellus* STGR. ♂. „1891 Hispan. s. Bilbao Sld.“, „Praep. Gen. Nr. 240“, author's coll.
- Fig. 8. *Crambus pratellus* (L.) ♀. „Polonia mer. Tatry 1300 m Mała Świnica, 25 VI 1950, leg. BŁESZYŃSKI“, author's coll.



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Plate LXV

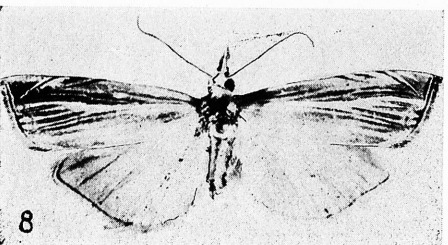
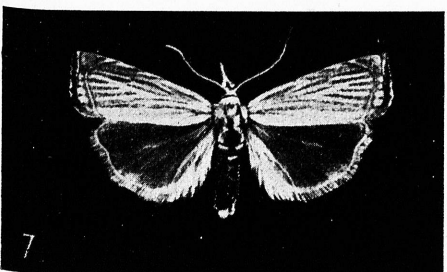
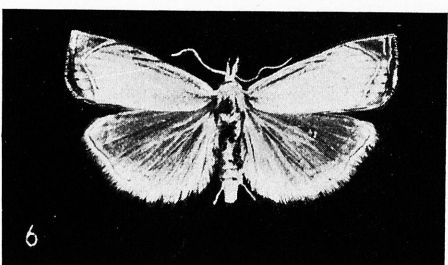
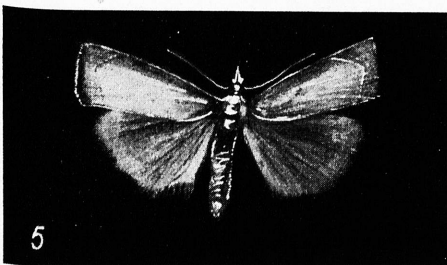
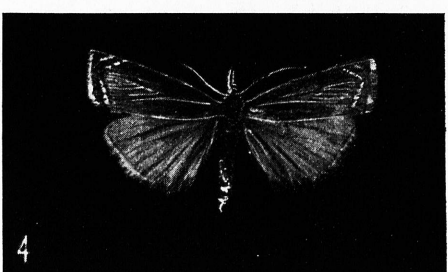
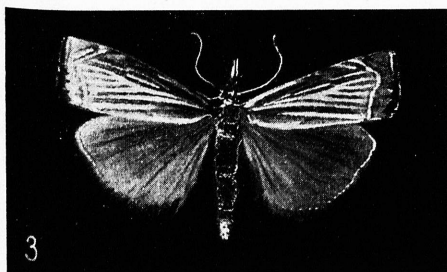
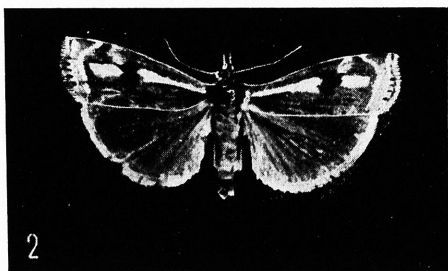
- Fig. 1. *Crambus hamellus* (THNBG.) ♂. „Kraków Podgórk, 21 VIII 1946, leg. BLESZYŃSKI“, author's coll.
- Fig. 2. *Crambus alienellus* (GERM. & ZINCK.) ♀. „Tb Pyhähäkki, 26—29 V 1947, F. HACKMANN“, author's coll.
- Fig. 3. *Crambus alienellus* (GERM. & ZINCK.) ♂. „Bav. alp. Kochel 600 m Moos, 28 V 1950, L. OSTHELDER leg.“, author's coll.
- Fig. 4. *Crambus alienellus* (GERM. & ZINCK.) ♀. „Bav. alp. Kochel 600 m Moos, 25 V 1950, L. OSTHELDER leg.“, author's coll.
- Fig. 5. *Crambus alienellus* (GERM. & ZINCK.) ♂. „Polonia mer. Podezerwone distr. Nowy Targ 600 m, 4 VII 1950, leg. BLESZYŃSKI“, author's coll.
- Fig. 6. *Crambus alienellus* (GERM. & ZINCK.) ♀. „Polonia mer. Podezerwone distr. Nowy Targ, 12 VII 1951, leg. BLESZYŃSKI“, author's coll.
- Fig. 7. *Crambus alienellus* (GERM. & ZINCK.) ♂. „Puszcza Kampinoska rew. Sieraków, 6 VI 1937, E. ŚWIDERSKI“, [Polonia c.], author's coll.
- Fig. 8. *Crambus palustrellus* RAG. ♂. „Gallia Gascogne“, author's coll.



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Plate LXVI

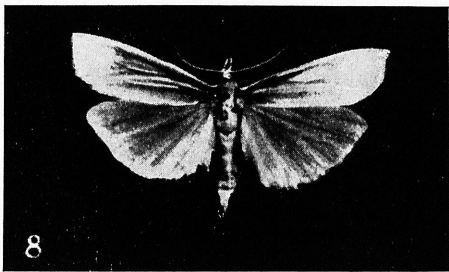
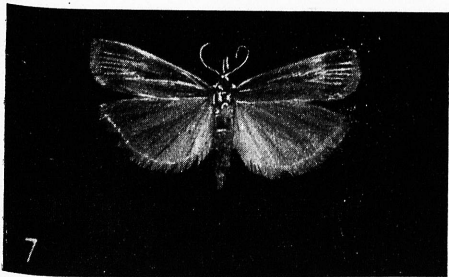
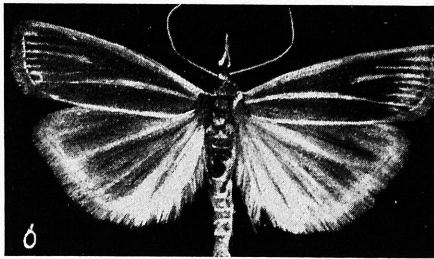
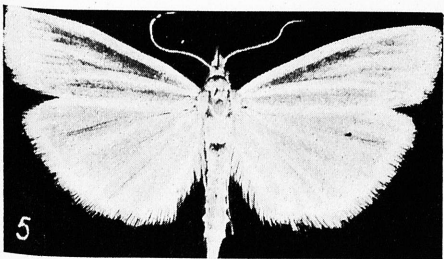
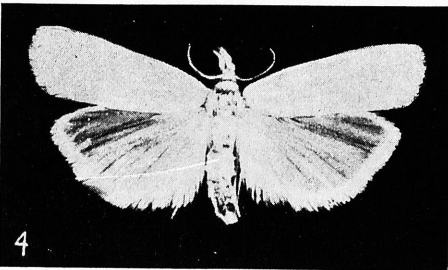
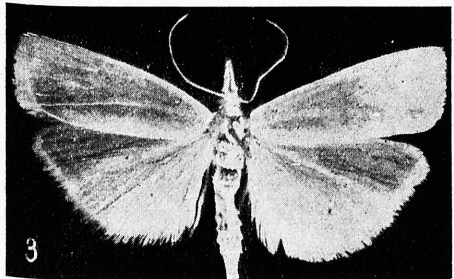
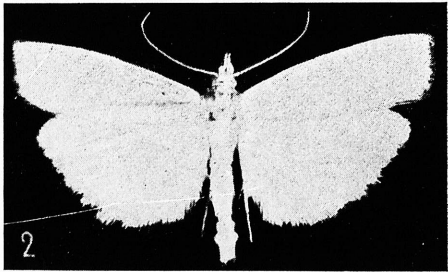
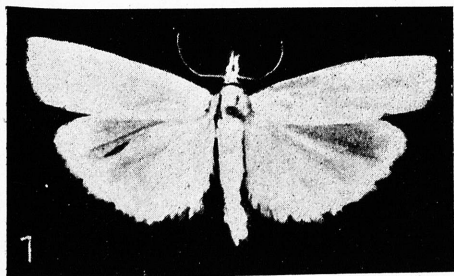
- Fig. 1. *Crambus heringiellus* H.-S. ♂. „Polonia sept. Międzyzdroje“, author's coll.
- Fig. 2. *Crambus heringiellus* H.-S. ♀. „Lüneburg-Heide Nieder-Haverbeck E. VII 1946, E. JÄCKH“, author's coll.
- Fig. 3. *Crambus hortuellus* (HBN.) ♂. „Polonia mer. Krynica 600 m, 12 VI 1950, leg. BLESZYŃSKI“, author's coll.
- Fig. 4. *Crambus hortuellus* (HBN.) ♂. „Polonia mer. Rytro Radziejowa ca 1100 m, 17 VI 1953“, author's coll.
- Fig. 5. *Crambus hortuellus* (HBN.) ♂. „Rungstedt, LANGER“, author's coll.
- Fig. 6. *Crambus hortuellus* (HBN.) ab. *cespitellus* (HBN.) ♂. „Süd-Pfalz St. Johann, 12 VI 1949, leg. DE LATTIN“, author's coll.
- Fig. 7. *Crambus hortuellus* (HBN.) ♀. „Woj. Kraków Grodkowice, 16 VI 1947, BLESZYŃSKI“, author's coll.
- Fig. 8. *Crambus pallidellus* DUP. ♂. „GU 802 a“, „Algezares Murcia 1894 KORB“, „Typus“, „*Crambus cuencalis* Hmps. Cuenca“, coll. Zoological Museum of Humboldt Universität in Berlin.



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Plate LXVII

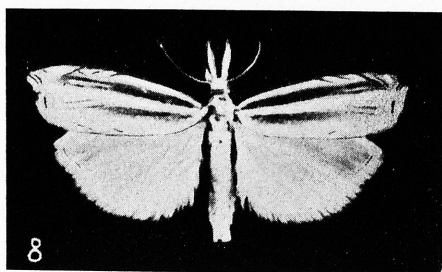
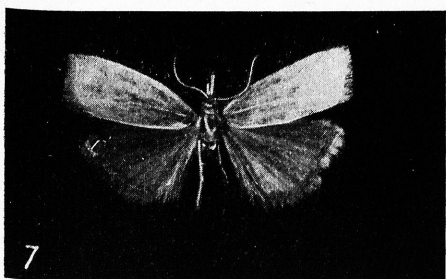
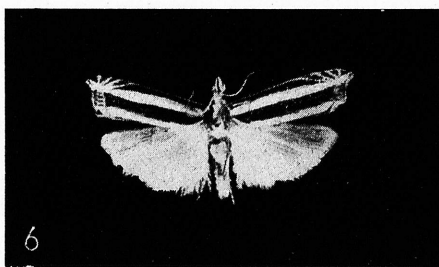
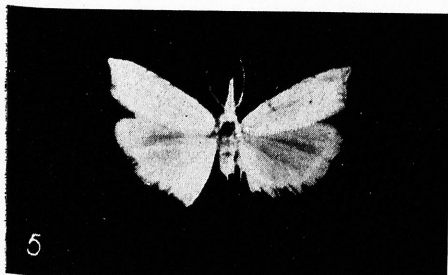
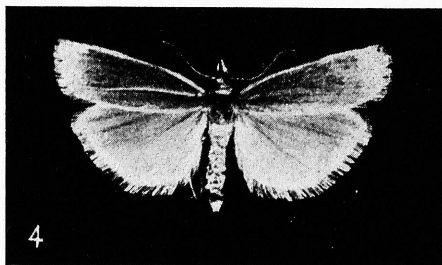
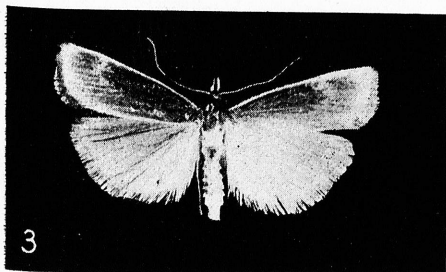
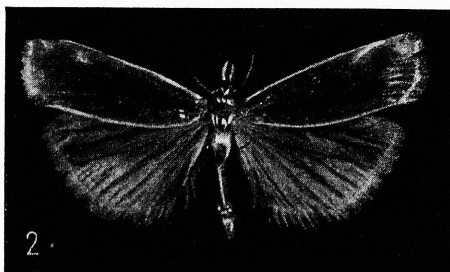
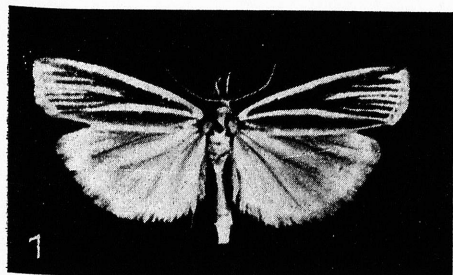
- Fig. 1. *Crambus perlellus* (SCOP.) ♂. „Kraków Kostrze, 7 VII 1949, leg. BLESZYŃSKI“, author's coll.
- Fig. 2. *Crambus perlellus* (SCOP.) ♂. „Kraków Kostrze, 7 VII 1949, leg. BLESZYŃSKI“, author's coll.
- Fig. 3. *Crambus perlellus* (SCOP.) ♂. „Rosnówko pow. Poznań, 17 VI 1951, A. SZMYT leg.“, author's coll.
- Fig. 4. *Crambus perlellus* (SCOP.) ♂. „Kraków Kostrze, 7 VII 1949, leg. BLESZYŃSKI“, author's coll.
- Fig. 5. *Crambus perlellus* (SCOP.) ab. *warringtonellus* STT. ♂. „Kraków Kostrze, 7 VII 1949, leg. BLESZYŃSKI“, author's coll.
- Fig. 6. *Crambus perlellus* (SCOP.) f. ♂. „Ostfries. Inseln Wangeroog, Lichtfang 3 VII 1949, E. JÄCKH“, author's coll.
- Fig. 7. *Crambus perlellus* (SCOP.) f. ♂. „Gullane E. Lothian, 12 VIII 1950, E. C. P.-C.“, author's coll.
- Fig. 8. *Crambus perlellus* (SCOP.) f. ♂. „Glandyfi, 20 VII 1950, E. C. P.-C., At light 5114“, author's coll.



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Plate LXVIII

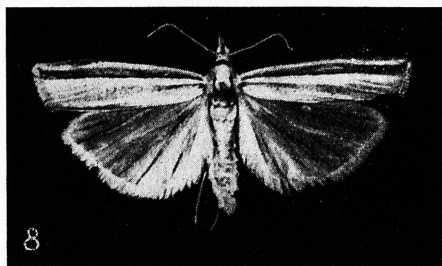
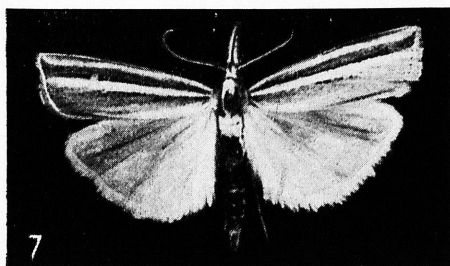
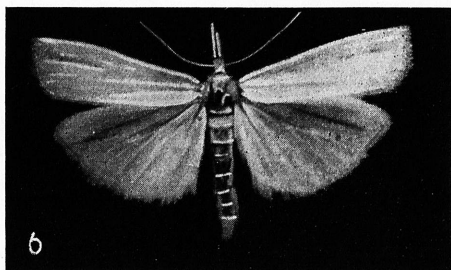
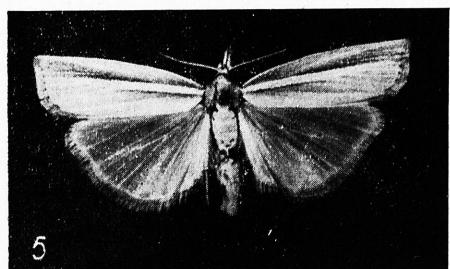
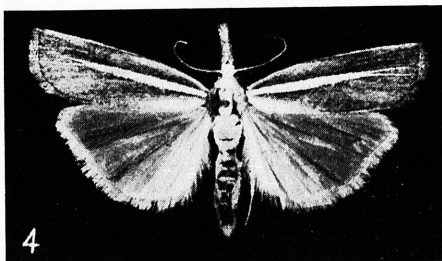
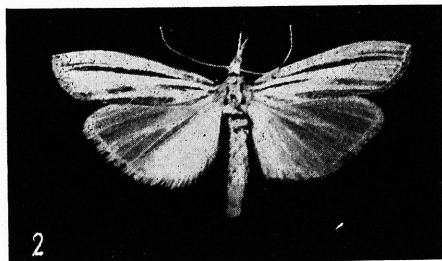
- Fig. 1. *Crambus perlellus* (SCOP.) f. ♂. „Polonia mer. Tatry 900 m Zakopane 28 VI 1950, leg. BLESZYŃSKI“, author's coll.
- Fig. 2. *Crambus perlellus* (SCOP.) subsp. *pseudorostellus* M.-R. ♂. „Aosta Fiery, VII 1936, A. FIORI“, „Praep. Gen. Nr. 403“, author's coll.
- Fig. 3. *Crambus rostellus* LAH. ♂. „6 VII 1874, Bergün“, author's coll.
- Fig. 4. *Crambus rostellus* LAH. ♀. „Engadin“, author's coll.
- Fig. 5. *Metacrambus caretellus* (Z.) ♂. „Rossia mer.“, „Praep. Gen. Nr. 468“, author's coll.
- Fig. 6. *Crambopsis malacellus* (DUP.) ♂. „Bass. Pyrenées St. Pierre d'Irube, VIII 1937, CH. FISCHER“, author's coll.
- Fig. 7. *Neocrambus wolfschlägeri* (SCHAW.) ♂. „Asandzura Macedonia, 20—23 VI 1939 THURNER“, author's coll.
- Fig. 8. *Mesocrambus candiellus* (H.-S.) ♂. „Királyhalom DR. SCHMIDT, 1933 VII 20—31“, author's coll.



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Plate LXIX

- Fig. 1. *Agriphila deliella* (HBN.) ♂. (Polonia c.) „Puszcza Kampinoska Wydma Łuże, 22 VIII 1950, BŁESZYŃSKI“, author's coll.
- Fig. 2. *Agriphila deliella* (HBN.) ♀. „Polonia mer. Ligota distr. Katowice 1 IX 1951, leg. BŁESZYŃSKI“, author's coll.
- Fig. 3. *Agriphila selasella* (HBN.) ♂. „Polonia mer. Dulowa distr. Chrzanów, 8 VIII 1952, leg. BŁESZYŃSKI“, author's coll.
- Fig. 4. *Agriphila selasella* (HBN.) ♀. „Polonia mer. Dulowa distr. Chrzanów 8 VIII 1952, leg. BŁESZYŃSKI“, author's coll.
- Fig. 5. *Agriphila selasella* (HBN.) ♀. „Polonia mer. Dulowa distr. Chrzanów, 8 VIII 1952, leg. BŁESZYŃSKI“, author's coll.
- Fig. 6. *Agriphila aeneociliella* (EVERS.) ♂. „Polonia c. Wólka Kozłowska ad Tuszcz distr. Radzymin, 19 VIII 1951, leg. BŁESZYŃSKI“, author's coll.
- Fig. 7. *Agriphila aeneociliella* (EVERS.) ♂. „Polonia c. Wólka Kozłowska ad Tuszcz distr. Radzymin, 19 VIII 1951, leg. BŁESZYŃSKI“, author's coll.
- Fig. 8. *Agriphila aeneociliella* (EVERS.) ♀. „Polonia c. Wólka Kozłowska ad Tuszcz distr. Radzymin, 24 VIII 1949, BŁESZYŃSKI“, author's coll.



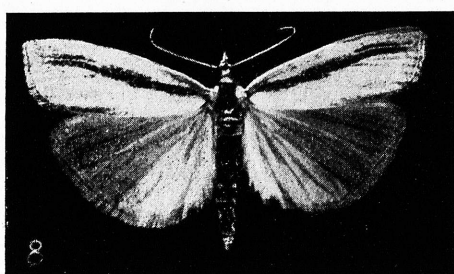
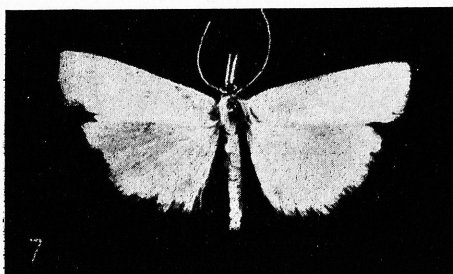
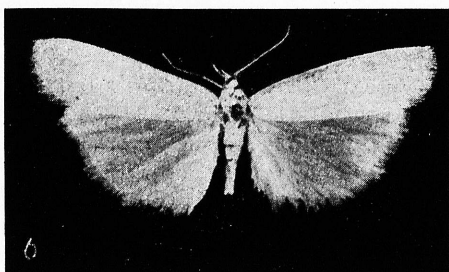
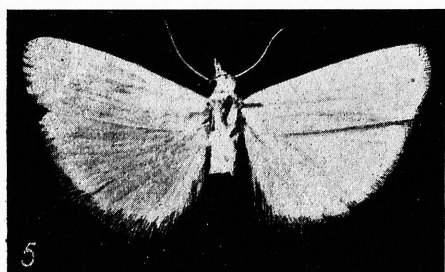
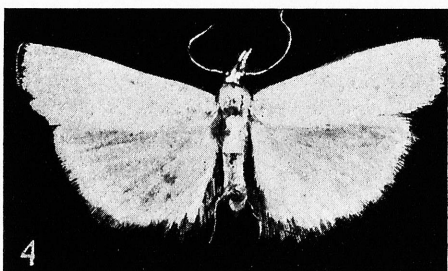
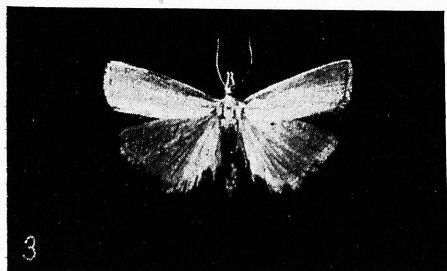
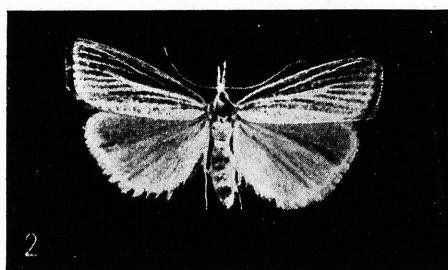
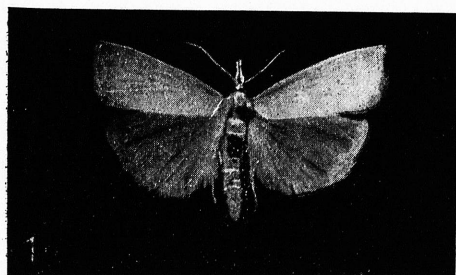
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Plate LXX

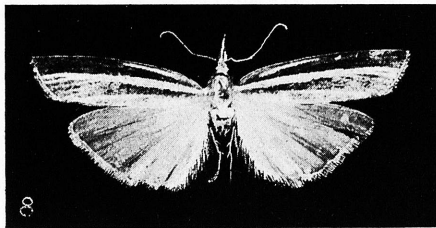
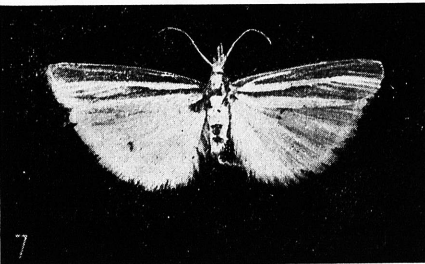
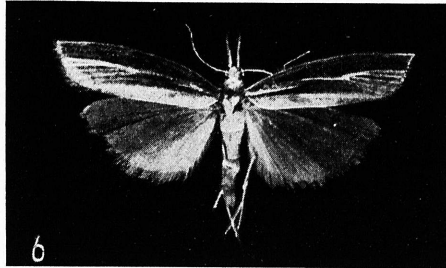
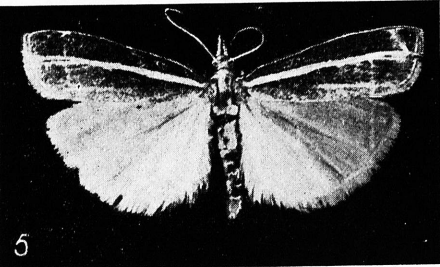
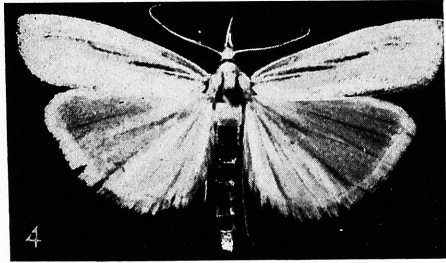
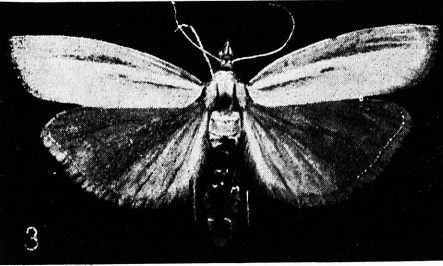
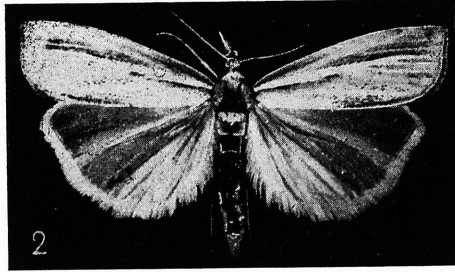
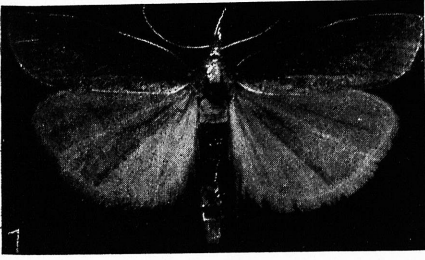
- Fig. 1. *Agriphila culmella* (L.) ♂. „Kraków Podgórk. 1 VIII 1950, BLESZYŃSKI“, „Praep. Gen. Nr. 414“, author's coll.
- Fig. 2. *Agriphila culmella* (L.) ♂. „Tatry 900 m Zakopane, 18 VII 1948. BLESZYŃSKI“, author's coll.
- Fig. 3. *Agriphila culmella* (L.) f. ♂. „Port Appin Argyll, 8 VII 1951. E. c P.-C. 5832“, author's coll.
- Fig. 4. *Agriphila paleatella* (ZELL.) ♂. „Asia minor c. Akshehir 1—16 X 1931, coll. WAGNER, Wien“, „*paleatellus* Z.“, „Praep. Gen. Cramb. Wien. Naturhist. Mus. Nr. 20 *Agriphila paleatella* (ZELL.) det. et praep. BLESZYŃSKI 1953“, coll. Museum of the Natural History in Vienna.
- Fig. 5. *Agriphila osseella* (HMPs.) ♂. Hispania, Andalusia, author's coll.
- Fig. 6. *Agriphila osseella* (HMPs.) ♂. „579“, „*osseellus* HMPs. Granada“, „Praep. Gen. Cramb. Nat.-Hist. Mus. Wien. Nr. 22 det. et praep. BLESZYŃSKI 1953“, coll. Museum of the Natural History in Vienna.
- Fig. 7. *Agriphila osseella* (HMPs.) ♂. „Prov. Madrid Montarco, 1921 IX“, author's coll.
- Fig. 8. *Agriphila tristella* (DEN. & SCHIFF.) ♂. „Kraków Podgórk. VIII 1950, BLESZYŃSKI“, author's coll.



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Plate LXXI

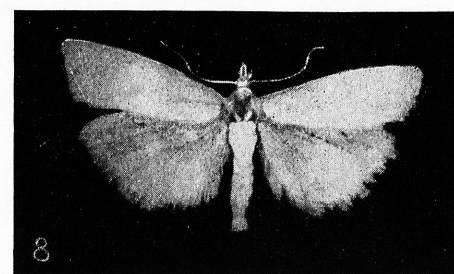
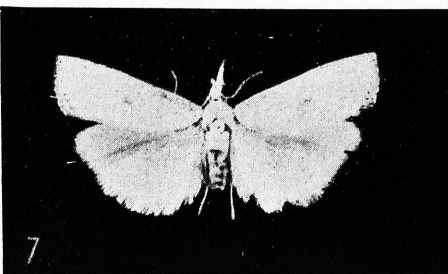
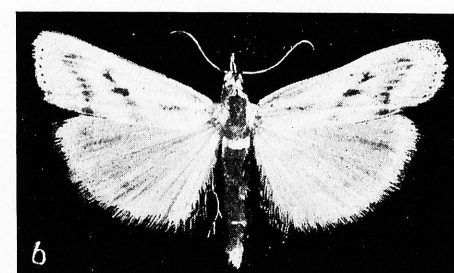
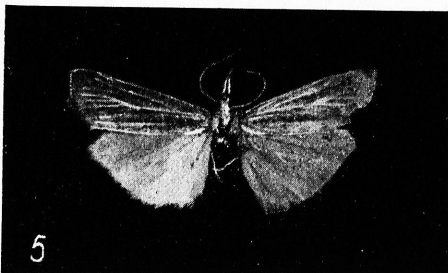
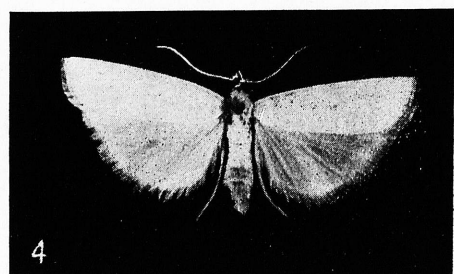
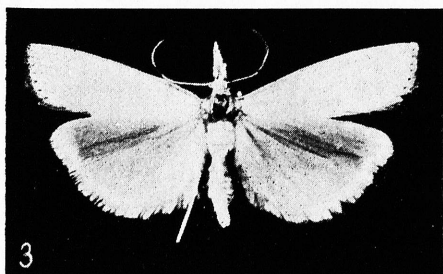
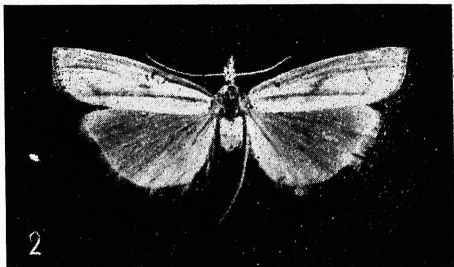
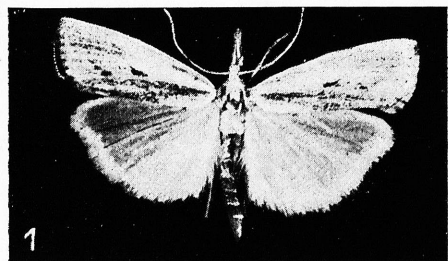
- Fig. 1. *Agriphila tristella* (DEN. & SCHIFF.) ♂. „Kraków Podgórk, 6 VIII 1952, BLESZYŃSKI, author's coll.
- Fig. 2. *Agriphila tristella* (DEN. & SCHIFF.) ♂. „Kraków Podgórk, 6 VIII 1952, BLESZYŃSKI, author's coll.
- Fig. 3. *Agriphila tristella* (DEN. & SCHIFF.) ♀. „Kraków Podgórk, 6 VIII 1952, BLESZYŃSKI“, author's coll.
- Fig. 4. *Agriphila tristella* (DEN. & SCHIFF.) ♂. „Kraków Podgórk 28 VIII 1950, BLESZYŃSKI“, author's coll.
- Fig. 5. *Agriphila tristella* (DEN. & SCHIFF.) ♂. „Süd-Pfalz Geilweilerhof, 23 VIII 1950, leg. DE LATTIN“, author's coll.
- Fig. 6. *Agriphila tristella* (DEN. & SCHIFF.) ♂. „Polonia mer. Ligota distr. Katowice 29 VIII 1952, leg. BLESZYŃSKI“, author's coll.
- Fig. 7. *Agriphila tristella* (DEN. & SCHIFF.) subsp. *pseudotristella* (ZERNY) ♂. „Mistretta 1000 m Sicilia, 14 IX 1938, coll. H. REISSER Wien“, „Praep. Gen. Nr. 457“, „*Crambus pseudotristellus* ZERNY Paratype ♂“. author's coll.
- Fig. 8. *Agriphila tristella* (DEN. & SCHIFF.) subsp. *pseudotristella* ZERNY ♀. „Mistretta 1000 m Sicilia, 15 IX 1938, coll. H. REISSER Wien“, „*Crambus pseudotristellus* ZERNY Paratype ♀“, „Praep. Gen. Wien. Nat.-Hist. Mus. Nr. 23 *Agriphila tristella* (DEN. & SCHIFF.) subsp. *pseudotristella* (ZERNY) praep. et det. BLESZYŃSKI 1953“, coll. Museum of the Natural History in Vienna.



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Plate LXXII

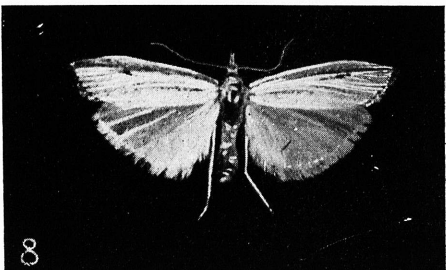
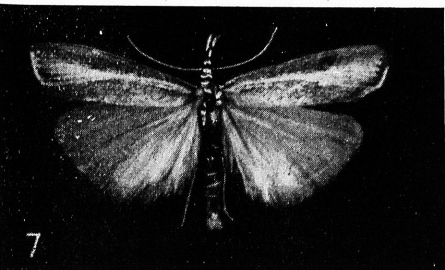
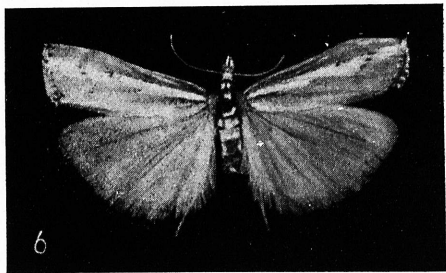
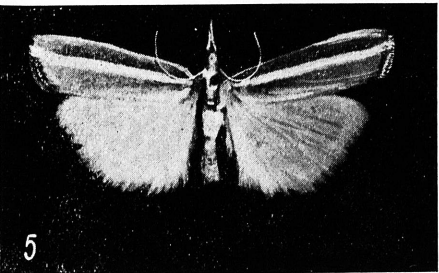
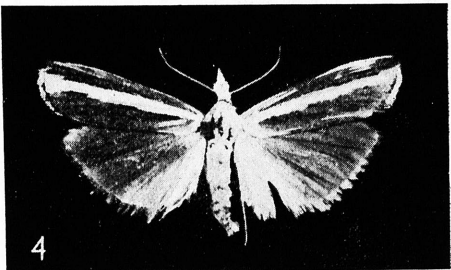
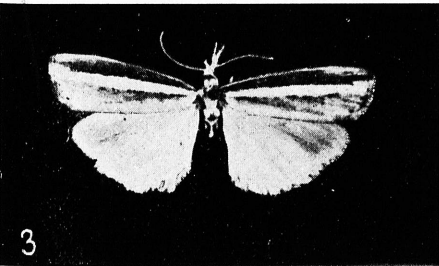
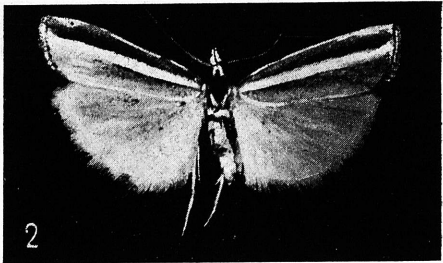
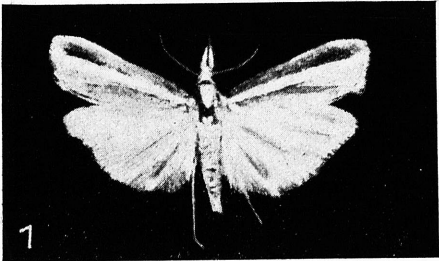
- Fig. 1. *Agriphila inquinatella* (DEN. & SCHIFF.) ♂. (Polonia c.) „Puszcza Kampinoska Wydma Łuże, 23 VIII 1949, BLESZYŃSKI“, author's coll.
- Fig. 2. *Agriphila inquinatella* (DEN. & SCHIFF.) ♀. „Süd-Pfalz Geilweilerhof, 6 VIII 1950, leg. DE LATTIN“, „Praep. Gen. Nr. 461“, author's coll.
- Fig. 3. *Agriphila inquinatella* (DEN. & SCHIFF.) ♀. „Wólka Kozłowska ad Tuszcz distr. Radzymin (Polonia c.), 10 VIII 1949“, author's coll.
- Fig. 4. *Agriphila inquinatella* (DEN. & SCHIFF.) ab. *amaculella* (SZENT-IVANY & UHRIK) ♀. „Budafok, UHRIK, 1916 VIII 26“, „cotyp“, author's coll.
- Fig. 5. *Agriphila inquinatella* (DEN. & SCHIFF.) ♂. „Hel—Chalupy, 27 VII 1937, E. ŚWIDERSKI“, „Praep. Gen. Nr. 419“, author's coll.
- Fig. 6. *Agriphila nebrodella* (ZERNY) ♂. „Mistretta 1000 m Sicilia, 23 IX 1938, coll. H. REISSER Wien“, „*Crambus nebrodellus* ZERNY ♂ Paratype“, coll. Museum of the Natural History in Vienna.
- Fig. 7. *Agriphila brioniella* (ZERNY) ♂. „Roma Frascati, VII—VIII 1943“, „Praep. Gen. Nr. 198“, author's coll.
- Fig. 8. *Agriphila brioniella* (ZERNY) ♀. Bologna, leg. FIORI, author's coll.



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Plate LXXIII

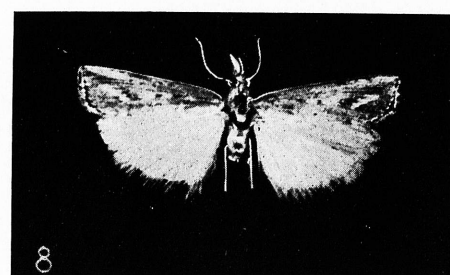
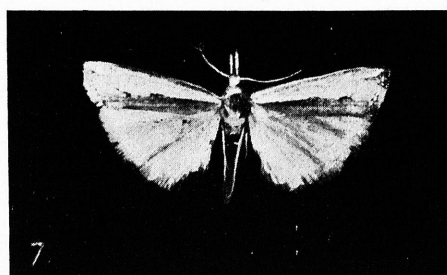
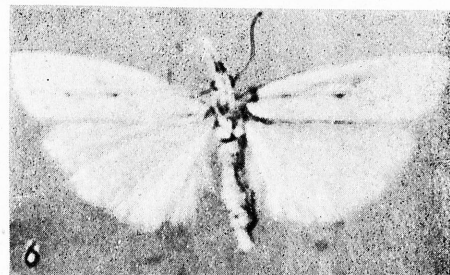
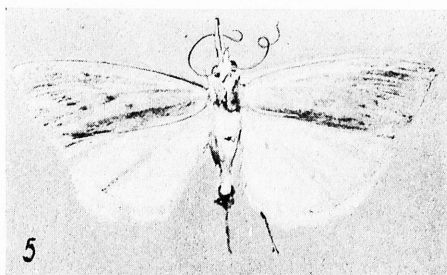
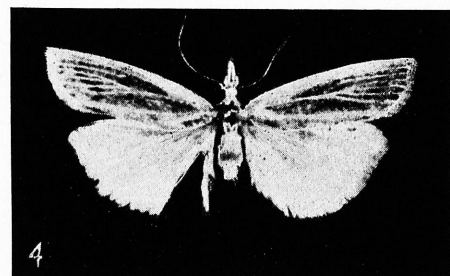
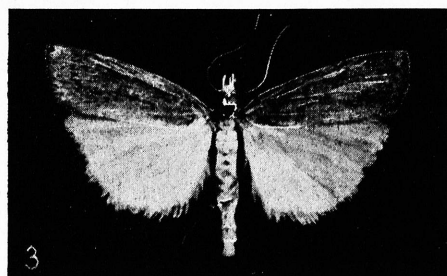
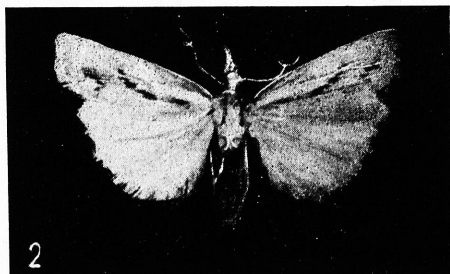
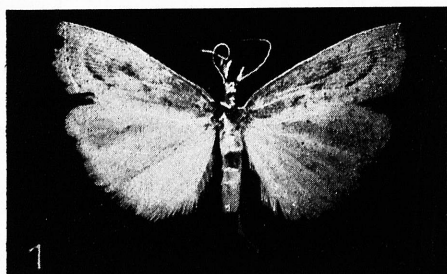
- Fig. 1. *Agriphila latistria* (HAW.) ♂. „England Brighton Sussex coll. WITTLE“, „*Crambus latistrius* HAW. det. J. D. BRADLEY 1951“, „Exchange ex B. M. (N.-H.)“, author's coll.
- Fig. 2. *Agriphila latistria* (HAW.) ♂. „Bussum, 19 VIII 1946, coll. C. DOETS“, „Praep. Gen. Nr. 404“, author's coll.
- Fig. 3. *Agriphila latistria* (HAW.) subsp. *monotaeniella* (H.-S.) ♂. „Sicilia“, „Origin“, „*vectifer* STGR. Type“, „Praep. Gen. Cramb. Berl. Zool. Mus. Nr. 10 praep. et det. BŁESZYŃSKI 1953“, coll. Zoological Museum of the Humboldt University in Berlin.
- Fig. 4. *Agriphila latistria* (HAW.) subsp. *monotaeniella* (H.-S.) ♂. „Sicilia Madonia 1000', IX 1907, coll. KRÜGER Mus. TURATI E.“, „*Crambus monotaeniellus* HS.“, „Praeparat Nr. 1754“, coll. S. TOLL.
- Fig. 5. *Agriphila latistria* (HAW.) ♂. „Gallia Vannes, 27 VIII“, „*latistrius* Hw. coll. KRONE“, „Praep. Gen. Nr. 402“, author's coll.
- Fig. 6. *Agriphila* ? *vallicolella* (COSTA) ♂. „Mistretta 1000 m Sicilia, IX 1937, coll. H. REISSER, Wien“, „Praep. Gen. Nr. 474“, author's coll.
- Fig. 7. *Agriphila poliella* (TREITSCH.) ♂. „Polonia mer. Katowice—Ligota, 29 VIII 1952, leg. BŁESZYŃSKI“, author's coll.
- Fig. 8. *Agriphila poliella* (TREITSCH.) ♀. „Poznań Główna, 23 VIII 1951, A. SZMYT leg.“, author's coll.



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Plate LXXIV

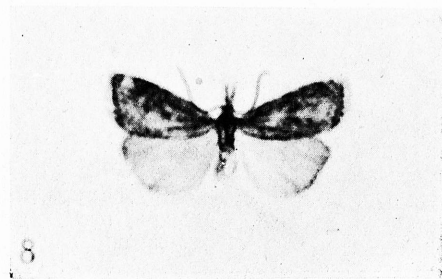
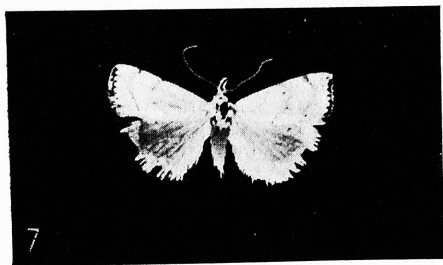
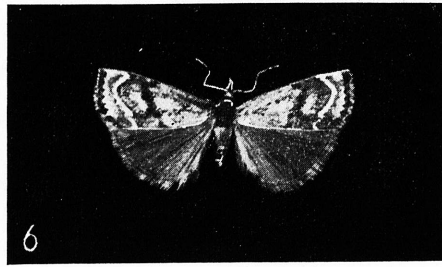
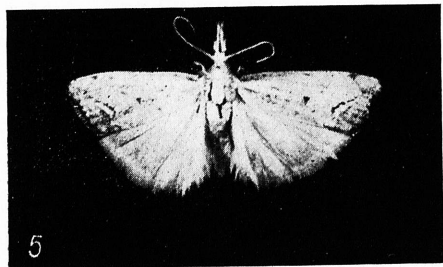
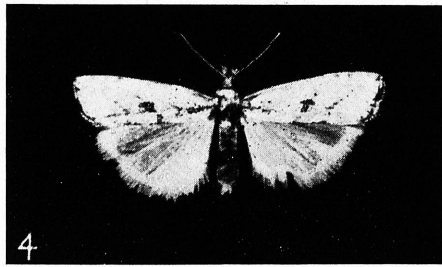
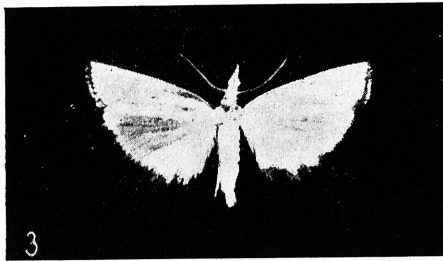
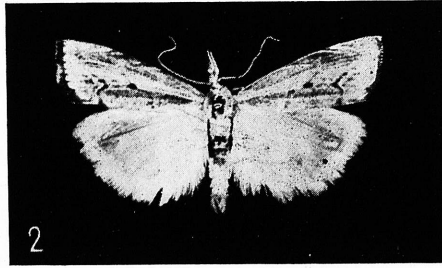
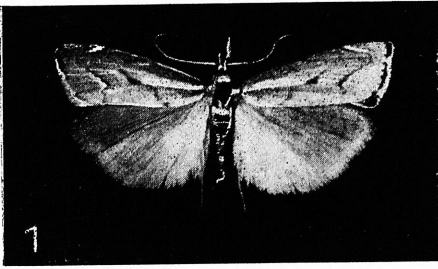
- Fig. 1. *Agriphila graphella* (CONST.) ♂. „Scurac b. Spalato, NOVAK, 15 VI“ author's coll.
- Fig. 2. *Agriphila graphella* (CONST.) ♀. „Emilia Casinalbo, 5 IX 1920, A. FIORI“, „Praep. Gen. Nr. 357“, author's coll.
- Fig. 3. *Agriphila hungarica* (SCHMIDT) ♂. „K. Szt. Miklós, SCHMIDT, 1913 VIII 30“, „cotyp“, „Praep. Gen. Nr. 232“, author's coll.
- Fig. 4. *Agriphila hungarica* (SCHMIDT) ♀. „Mezőberény, SCHMIDT“, „cotyp“, „Praep. Gen. Nr. 448“, author's coll.
- Fig. 5. *Agriphila tersella* (LED.) ♂. „Martin“, „coll. LED.“, „Origin“, „tersellus LD.“ (Typus ♂), „Praep. Gen. Cramb. Berl. Zool. Mus. Nr. 12, *Agriphila tersella* (LED.) praep. et det. BLESZYŃSKI 1952“, coll. Zoological Museum of the Humboldt University in Berlin.
- Fig. 6. *Agriphila tersella* (LED.) ♀. „Martin“, „coll. Led.“, „Origin“, „tersellus LD.“, „Praep. Gen. Cramb. Berl. Zool. Mus. Nr. 14“, *Agriphila tersella* (LED.) praep. et det. BLESZYŃSKI 1952“, coll. Zoological Museum of the Humboldt University in Berlin.
- Fig. 7. *Agriphila trabeatella* (H.-S.) ♂. „Zentral Algerien Guelt-es-Stel, 27—30 IX 1929, ZERNY“, „Praep. Gen. Nr. 273“, author's coll.
- Fig. 8. *Agriphila cyrenaicella* (RAG.) ♂. „Tripolitania Jefren X 1935, A. FIORI“, author's coll.



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Plate LXXV

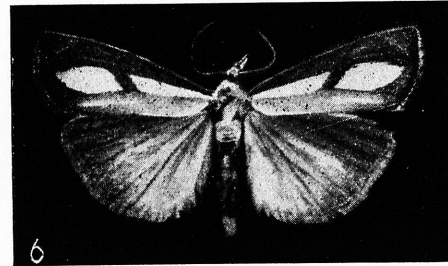
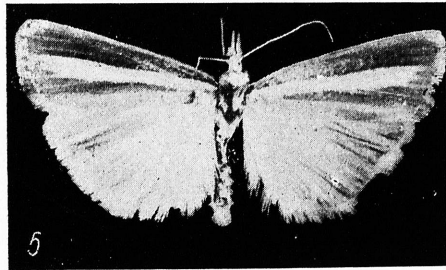
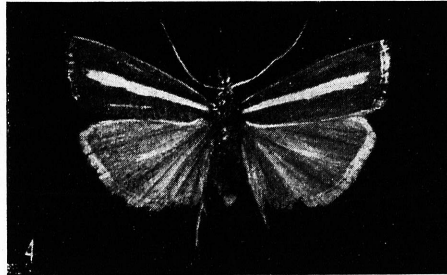
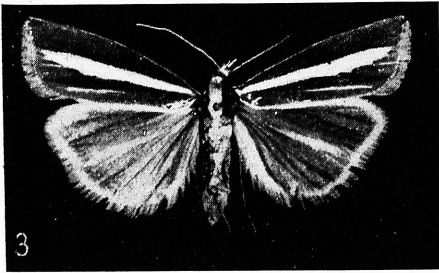
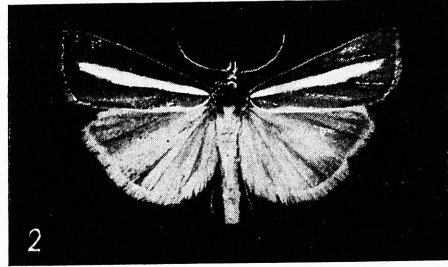
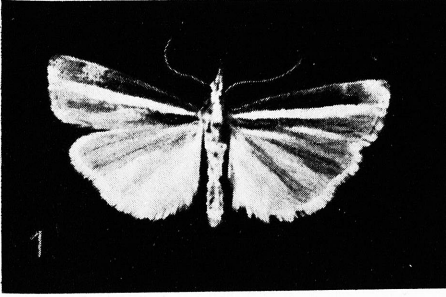
- Fig. 1. *Agriphila geniculea* (HAW.) ♂. „Ustroń Równica, VIII 1939 leg. S. TOLL“, author's coll.
- Fig. 2. *Agriphila geniculea* (HAW.) ♂. „Roma Frascati VII—VIII 1943“, author's coll.
- Fig. 3. *Agriphila geniculea* (HAW.) ♀. „Courthézon près Orange Vaucluse, 12—20 IX 1950, coll. CH. FISCHER“, author's coll.
- Fig. 4. *Agriphila dalmatinella* (HMPS.) ♂. „Dalmatia Knin, 9 IX 1935, J. HEFNER“, author's coll.
- Fig. 5. *Agriphila tolli* (BLESZ.) ♂. Holotypus. „Ragusa Dalmatien, 25—30 VIII 1937, H. G. AMSEL“, author's coll.
- Fig. 6. *Agriphila biarmica* (TNGSTR.) ♂. „Finlandia Otava Umg. (Mikkeli) 1935 leg. BRANDT“, „Praep. Gen. Nr. 329“, author's coll.
- Fig. 7. *Agriphila biarmica* (TNGSTR.) ♀. „Fennia“, author's coll.
- Fig. 8. *Agriphila biarmica* (TNGSTR.) subsp. *alpina* subsp. n. ♂. Holotypus. „F. 13 VII 1898. Sellajoch“, coll. S. Toll.



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Plate LXXVI

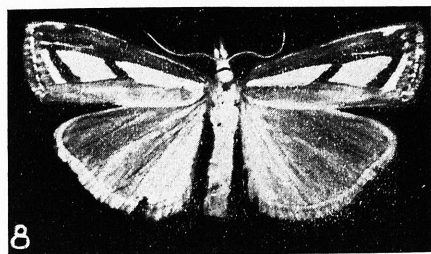
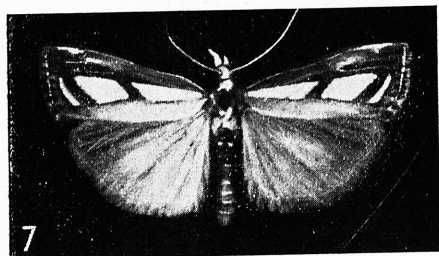
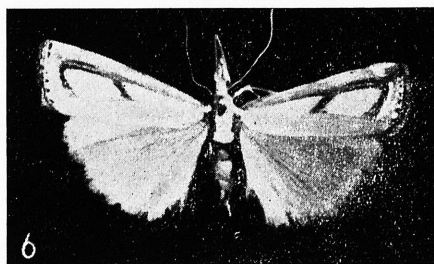
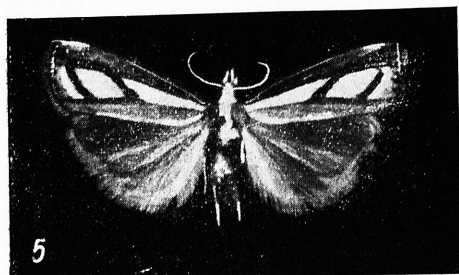
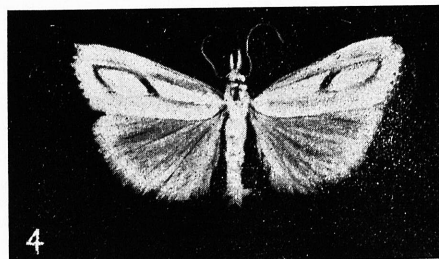
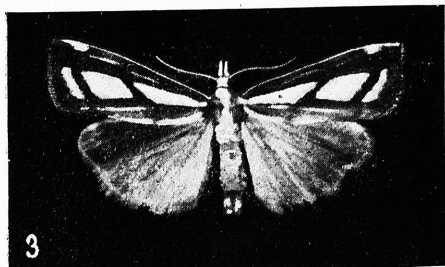
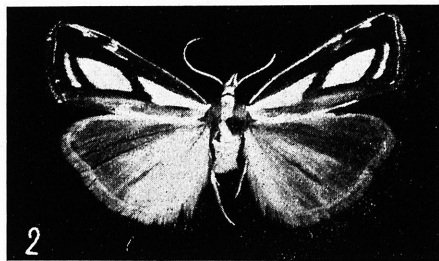
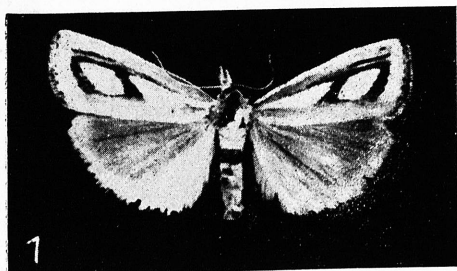
- Fig. 1. *Catoptria radiella* (HBN.) ♂. „Tirol Stubai 2500 m Hoher Burgstall, 16 VIII 1941, J. KLIMESCH“, author's coll.
- Fig. 2. *Catoptria radiella* (HBN.) subsp. *tatricella* (BLESZ.) ♂. „Paratypus“, „Tatry 1500 m Hala Gąsienicowa, 27 VII 1948, BLESZYŃSKI“, author's coll.
- Fig. 3. *Catoptria radiella* (HBN.) subsp. *tatricella* (BLESZ.) ♀. „Paratypus“, „Tatry 1300 m Mała Świnica, 27 VI 1950 leg. BLESZYŃSKI“, author's coll.
- Fig. 4. *Catoptria intermediella* (M.-R.) ♂. „Alpes Maritimes St. Martin-Vesubie“, „Madonna di Finestre, SCHMIDT, 1925 VIII 17“, author's coll.
- Fig. 5. *Catoptria bolivari* (AGENJO) ♀. „Cambasagne Cauterets H. [autes] P[yrénéés], 17 VII 1951, G. T. ADKIN“, author's coll.
- Fig. 6. *Catoptria conchella* (DEN. & SCHIFF.) ♂. „Saillanches et environs Ht. Savoie 3—25 VI 1950, 10—1400 m, coll. CH. FISCHER“, author's coll.
- Fig. 7. *Catoptria conchella* (DEN. & SCHIFF.) ♀. „Rainkopf Crête Vosges Ht. Rhin, 19 VII 1949, CH. FISCHER (1300 m)“, „Praep. Gen. Nr. 431“, author's coll.
- Fig. 8. *Catoptria pauperella* (TREITSCH.) ♂. „Czarnohora Foreszczenka, ST. STACH, 2 VII 1936“, author's coll.



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Plate LXXVII

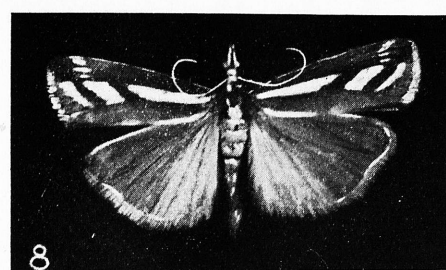
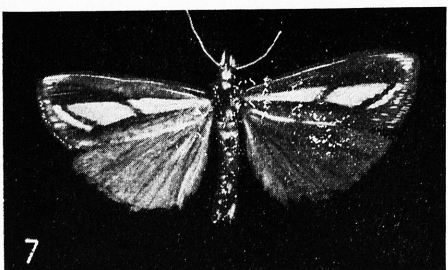
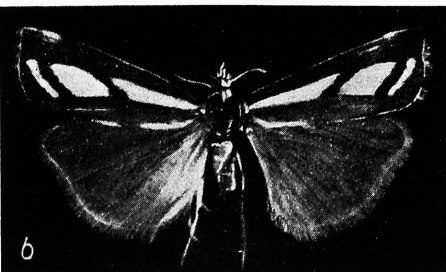
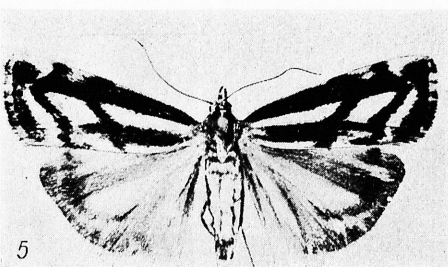
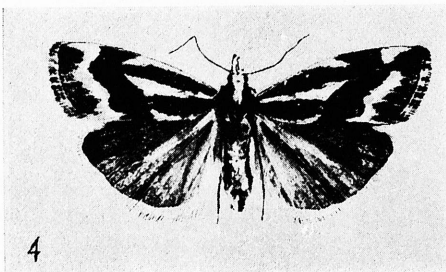
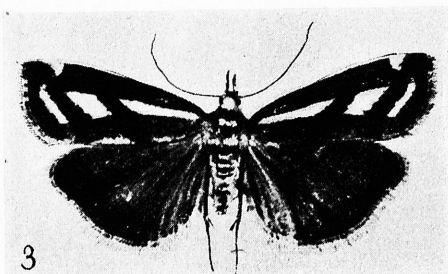
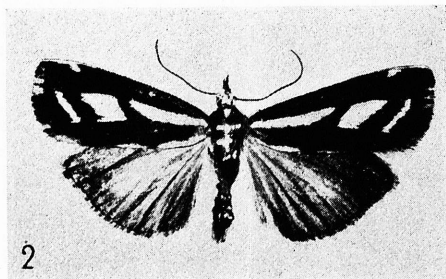
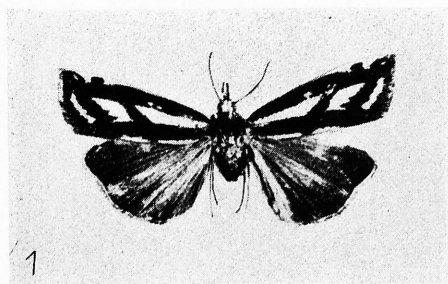
- Fig. 1. *Catoptria permutatella* (H.-S.) ♂. „12 VII 1937, Klagenfurt Kärnten, leg. THURNER“, author's coll.
- Fig. 2. *Catoptria permutatella* (H.-S.) ♀. „Kraków Podgórk, VI 1946“, author's coll.
- Fig. 3. *Catoptria myella* (HBN.) ♀. „Kochel Oby. (Ober-Bayern) 600 m, 27 VI 1946, leg. DR. H. WAGNER“, „*Crambus myellus* HBN. det. DR. DE LATTIN“, author's coll.
- Fig. 4. *Catoptria myella* (HBN.) subsp. *mellinella* (DE LATTIN) ♂. „Trentino Pinzolo, 1 VIII 1926, A. FIORI“, author's coll.
- Fig. 5. *Catoptria osthelderi* (DE LATTIN) ♂. „Kraków Podgórk, 25 VI 1947, BLESZYŃSKI“, „Praep. Gen. Nr. 173“, „Paratype *Crambus osthelderi* DR. DE LATTIN“, author's coll.
- Fig. 6. *Catoptria osthelderi* (DE LATTIN) ♂. „Zavidovic Kendi“, „Praep. Gen. Nr. 225“, author's coll.
- Fig. 7. *Catoptria gozmányi* BLESZ. ♂. „Retyezát Diószeghy, 1928 VII 15“, paratypus, author's coll.
- Fig. 8. *Catoptria gozmányi* BLESZ. ♀. „Retyezát 800 m, 1923 VI 1, Diószeghy“, paratypus, author's coll.



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Plate LXXVIII

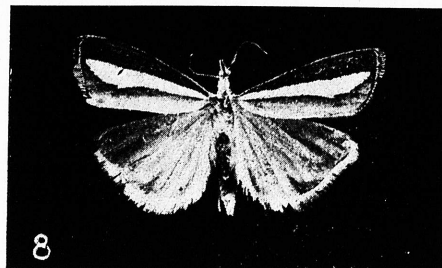
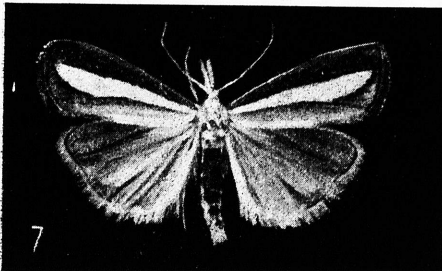
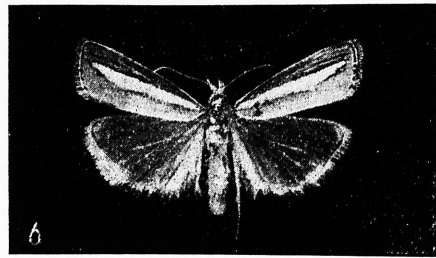
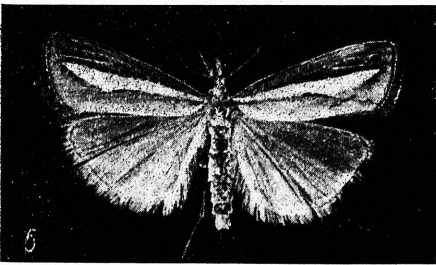
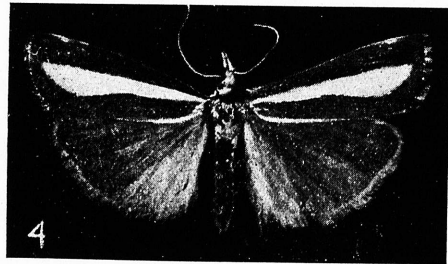
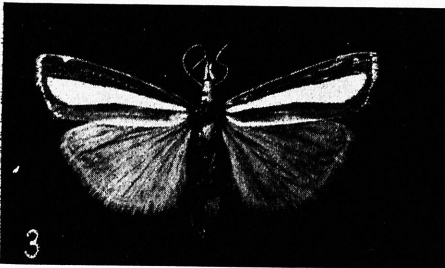
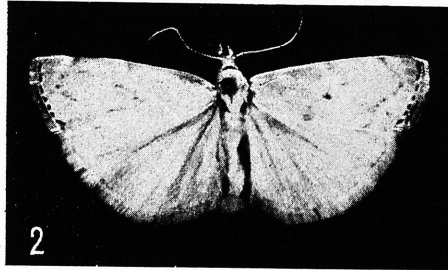
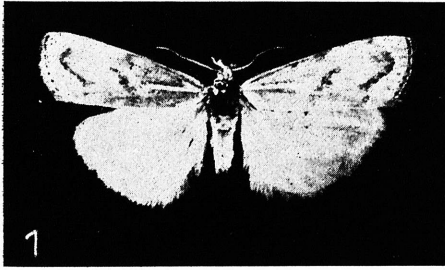
- Fig. 1. *Catoptria luctuella* (H.-S.) ♂. „Rax Alpe 1750 m, 11 VII“, author's coll.
- Fig. 2. *Catoptria luctuella* (H.-S.) ♂. „Styria Gesäuse Zinödl 1700—1800 m, 3 VII 1947, J. KLIMESCH“, author's coll.
- Fig. 3. *Catoptria luctiferella* (HBN.) ♂. „27 VII 1946, Glocknergeb. Kärnten 1800 m leg. THURNER“, author's coll.
- Fig. 4. *Catoptria luctuella* (H.-S.) ♀. „Gornimgrat leg. STAUDINGER“, coll. Zoological Museum of the Humboldt University in Berlin.
- Fig. 5. *Catoptria luctuella* (H.-S.) ♀. „Styria Gesäuse Zinödl 1700—1800 m, 3 VII 1947, J. KLIMESCH“, author's coll.
- Fig. 6. *Catoptria speculalis* HBN. ♂. „Alpes“, „Praep. Gen. Nr. 473“, author's coll.
- Fig. 7. *Catoptria speculalis* HBN. ♂. „1867 Stiria“, author's coll.
- Fig. 8. *Catoptria speculalis* HBN. ♂. „1925—1932, coll. L. & J. DE JOANNIS Museum Paris“, author's coll.



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Plate LXXIX

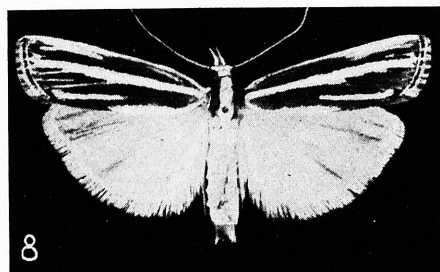
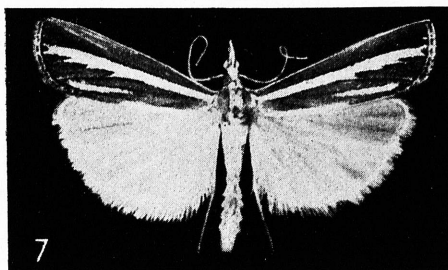
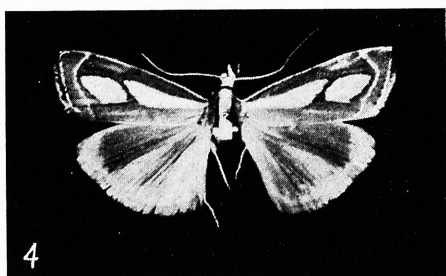
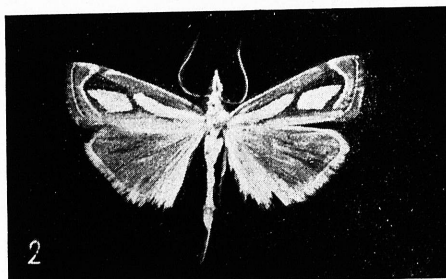
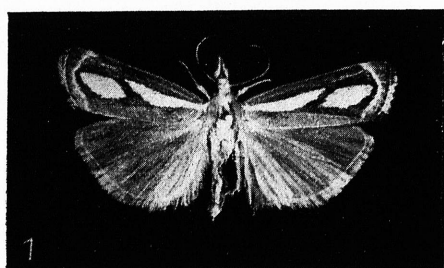
- Fig. 1. *Catoptria acutangulella* (H.-S.) ♂. „T. 02. F. *acutangulellus* Herzegovina Wien. Mus.“, „Prenj '01 PENTHER“, „Lucina 1500 m, 31 VII 1901“, „51135“, „*acutangulellus* HS“, „Praep. Gen. Nr. 259“, author's coll.
- Fig. 2. *Catoptria acutangulella* (H.-S.) ♂. „F. 25 VII 1908, Vuciabara Herzegovina, P. NAGEL“, author's coll.
- Fig. 3. *Catoptria spatulella* (TRT.) ♂. „Emilia Radici, 26 VII 1929, A. FIORI“, „Praep. Gen. Nr. 298“, author's coll.
- Fig. 4. *Catoptria pyramidella* (TREITSCH.) ♂. „14 VII 1949, Klagenfurt Karawanken Kärnten 1700 m leg. THURNER“, author's coll.
- Fig. 5. *Catoptria margaritella* (DEN. & SCHIFF.) ♂. „Bav. alp. Kochel Moos, 29 VIII 1934, L. OSTHELDER leg.“, author's coll.
- Fig. 6. *Catoptria margaritella* (DEN. & SCHIFF.) ♀. „Bav. alp. Kochel Moos, 29 VIII 1934, L. OSTHELDER leg.“, author's coll.
- Fig. 7. *Catoptria margaritella* (DEN. & SCHIFF.) mod. *montanicella* (BLESZ.), „Tatry 900 m Zakopane, 27 VI 1950, leg. BLESZYŃSKI“, author's coll.
- Fig. 8. *Catoptria margaritella* (DEN. & SCHIFF.) f. ♂. „Port Appin Argyll, 4 VIII 1951, No 5947“, author's coll.



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Plate LXXX

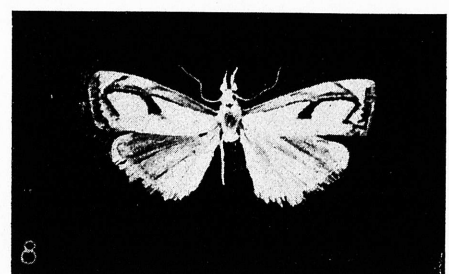
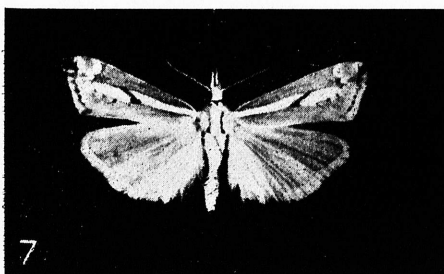
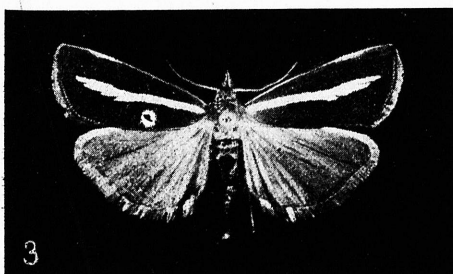
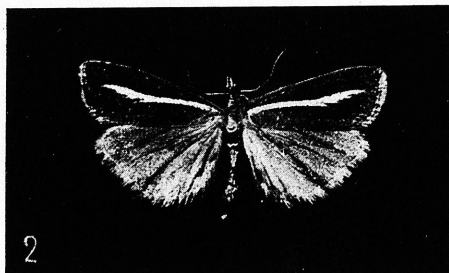
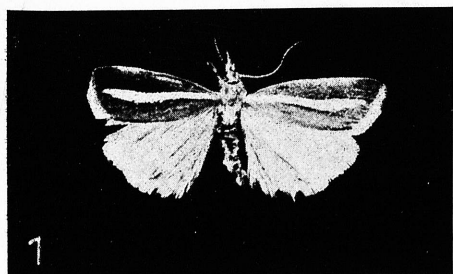
- Fig. 1. *Catoptria mytilella* (HBN.) ♂. „1872, Helvet. m. Wallis Stgr.“, author's coll.
- Fig. 2. *Catoptria mytilella* (HBN.) ♂. „Cuneo Frabosa Soprana, 5 VIII 1948, A. FIORI“, author's coll.
- Fig. 3. *Catoptria mytilella* (HBN.) ♂. „30 VII — 6 VIII 1934, Petrina plan. Maced. 1600 m, leg. THURNER“, author's coll.
- Fig. 4. *Catoptria mytilella* (HBN.) ♀. „Jarov, 14 VII 1941 Cechy (Bohemia) DR. R. SCHWARZ“, „Praep. Gen. Nr. 399“, author's coll.
- Fig. 5. *Catoptria aetnella* (ZERNY) ♀. „Sizilia Aetna 1600—2200 m, 8—17 VIII 1938, SCHWINGENSCHUSS“, „*Crambus aetnellus* ZERNY ♀ Paratype“, „Praep. Gen. Nr. 467“, author's coll.
- Fig. 6. *Catoptria laevigatella* (LED.) ♂. „Karangom 1810 m, 18 VII 1935, leg. R. WOJTUSIAK, „Polska wyprawa na Kaukaz VII—VIII 1936“, author's coll.
- Fig. 7. *Catoptria fulgidella* (HBN.) ♂. „Polonia mer. Ligota distr. Katowice, 29 VIII 1951, leg. BLESZYŃSKI“, author's coll.
- Fig. 8. *Catoptria fulgidella* (HBN.) ♀. „Nieder-Weser Eggstedt Klesbg., Lichtfang 12 VIII 1948, E. JÄCKH“, author's coll.



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Plate LXXXI

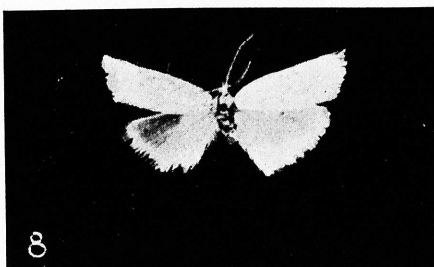
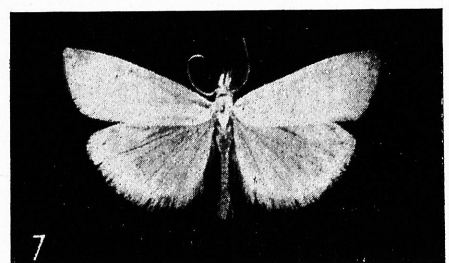
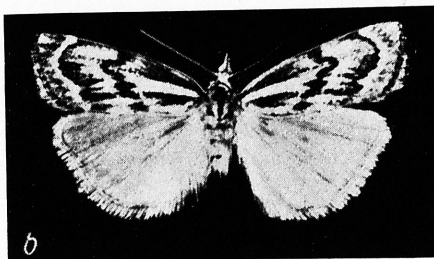
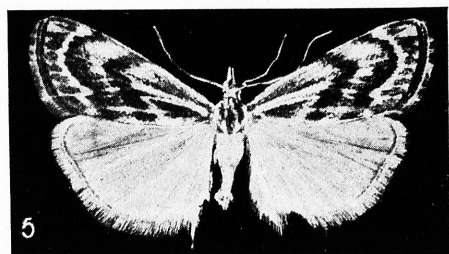
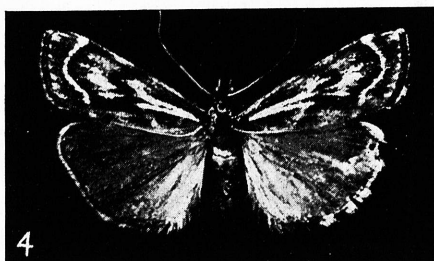
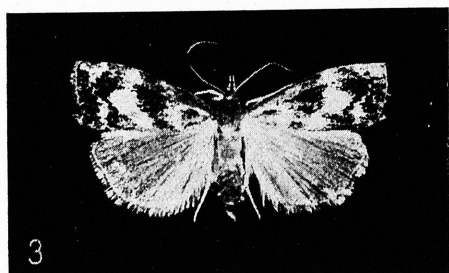
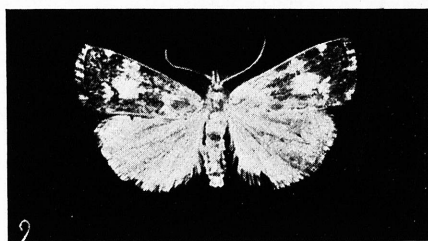
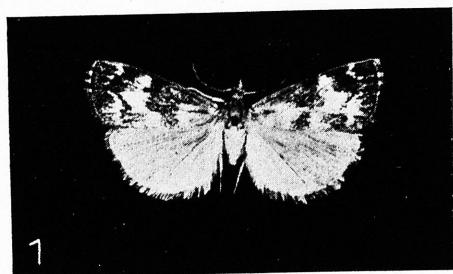
- Fig. 1. *Catoptria furcatella* (ZETT.) ♀. „Karvonen“, „Pummanki“, 8 VII 1939“, author's coll.
- Fig. 2. *Catoptria furcatella* (ZETT.) ♂. „27 VII 1942. Gr. Fleiss Glocknergeb. 1800 m“, author's coll.
- Fig. 3. *Catoptria furcatella* (ZETT.) ♂. „Tatry Dolina Pięciu Stawów 4 VII 1946, BLESZYŃSKI“, author's coll.
- Fig. 4. *Catoptria caucasica* (ALPH.) ♂. „Caucasus sept. leg. ALPH[ERAKY]“, „Paratype“, coll. Zoological Museum of the Humboldt University in Berlin.
- Fig. 5. *Catoptria pinella* (L.) ♂. „Kraków Podgórk, VII 1950, BLESZYŃSKI“, author's coll.
- Fig. 6. *Catoptria pinella* (L.) ♀. „Kácov Bohemia, 20 VII 1935. Dr. R. SCHWARZ“, author's coll.
- Fig. 7. *Catoptria corsicella* (DUP.) ♂. „Aritzo Sardegna, 6 VIII 1936. H. G. AMSEL“, author's coll.
- Fig. 8. *Catoptria permiaca* (PET.) ♂. „Manchuria Kaolingsu Station (Prov. Kirin), VII 1940“, „Praep. Gen. Nr. 430“, author's coll.



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Plate LXXXII

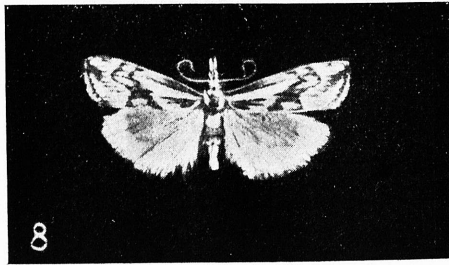
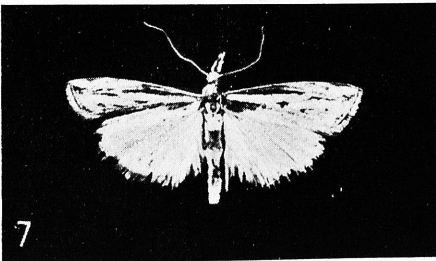
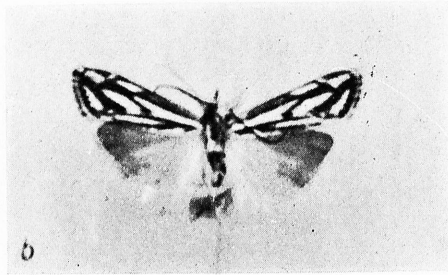
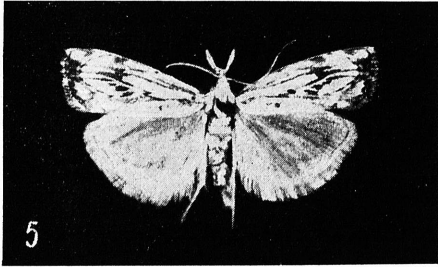
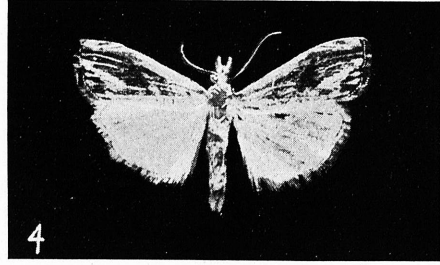
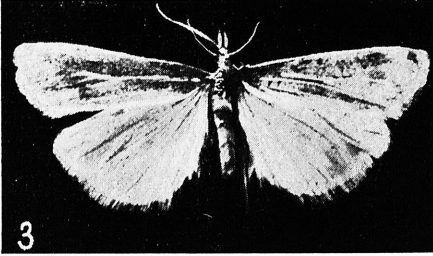
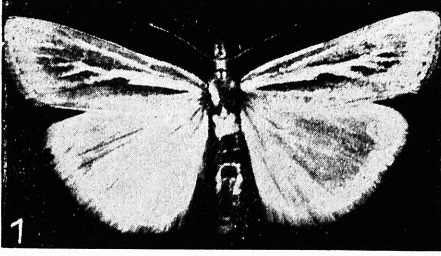
- Fig. 1. *Catoptria maculalis* (ZETT.) ♂. „Tromsdal, 6 VII 1880“, „51381“, „Praep. Gen. Nr. 32“, author's coll.
- Fig. 2. *Catoptria maculalis* (ZETT.) ♂. „Tirol Patsch. Kopf 2000 m, 2 VII 1942“, author's coll.
- Fig. 3. *Catoptria maculalis* (ZETT.) ♀. „Tatry 1600 m Pyszna, 13 VII 1949, leg. BŁESZYŃSKI“, author's coll.
- Fig. 4. *Catoptria müller-rutzi* (WEHRLI) ♂. „Alpes maritimes St. Martin — Vesubie“, „Balma la Frema, SCHMIDT, 1925 VIII 14“, „Praep. Gen. Nr. 496“, author's coll.
- Fig. 5. *Catoptria zermattensis* (FREY) ♂. „Helvetia Wallis, 1872, STGR.“, „Praep. Gen. Nr. 237“, author's coll.
- Fig. 6. *Catoptria zermattensis* (FREY) ♀. „FREY coll. 1890“, „*Crambus zermattensis* FREY det. J. D. BRADLEY 1951“, „Exchange ex B. M. (N.-H.)“, „Praep. Gen. Nr. 398“, author's coll.
- Fig. 7. *Catoptria languidella* (ZELL.) ♂. „Trento Lago Ritorto, 11 VII 1946, A. FIORI“, author's coll.
- Fig. 8. *Catoptria languidella* (ZELL.) ♀. „1883 Wallis Simplon Adgg.“, „Praep. Gen. Nr. 446“, author's coll.



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Plate LXXXIII

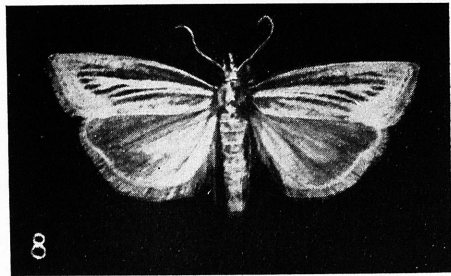
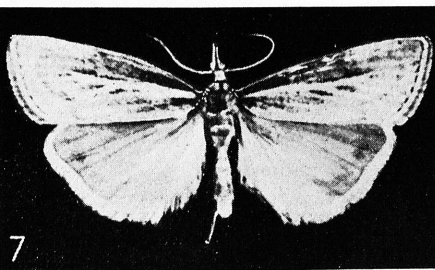
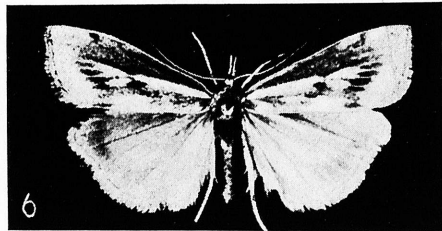
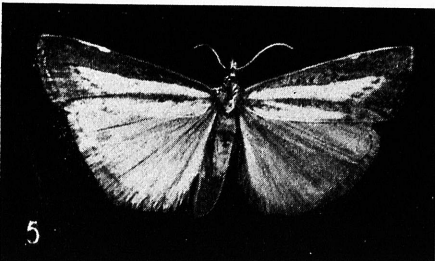
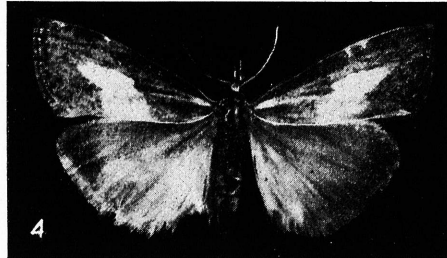
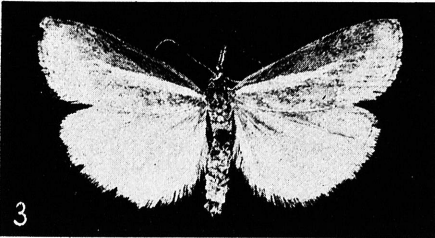
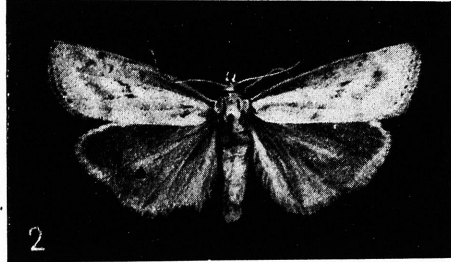
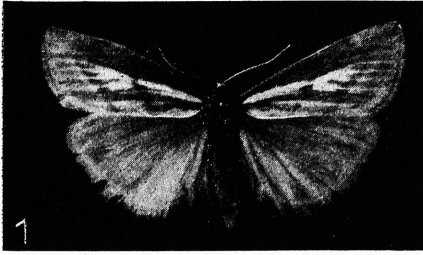
- Fig. 1. *Catoptria digitella* (H.-S.) ♂. „Pyrénées Orientales Mt. Canigou 1500—2500 m, 7—11 VIII 1951, leg. DR. DE LATTIN“, author's coll.
- Fig. 2. *Catoptria pseudociliciella* sp. n. ♂. Holotypus. „Caucasus“, „Praep. Gen. Nr. 297“, author's coll.
- Fig. 3. *Catoptria ciliciella* (REBEL) ♂. „HABERH. 1873 Gülek“, *Ciliciellus* RBL. ♂ Type Stett. e. Z. 1893“, coll. Museum of the Natural History in Vienna.
- Fig. 4. *Catoptria verella* (GERM. & ZINCK.) ♂. „Ville (B. R.) 25 VI 1935“, author's coll.
- Fig. 5. *Catoptria falsella* (DEX. & SCHIFF.) ♂. „Bohemia Praha—Prokop leg. VLACH“, author's coll.
- Fig. 6. *Catoptria incertella* (H.-S.) ♀. „1/9“, „93“, „STAUDG. Caucas 1882“, „Praep. Gen. Cramb. Wien. Naturhist. Mus. Nr. 11 praep. et det. BLESZYŃSKI 1953“, coll. Museum of the Natural History in Vienna.
- Fig. 7. *Catoptria staudingeri* (ZELL.) ♂. „Soalheira“ (Portugal), „1920—1932 coll. L. & J. DE JOANNIS Museum Paris“, author's coll.
- Fig. 8. *Catoptria confusella* (STGR.) ♂. „Austria inf. Dürnstein, 25 VIII 1935, Jos. KLIMESCH“, author's coll.



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Plate LXXXIV

- Fig. 1. *Catoptria coultonella* (DUP.) ♂. „Polonia mer. Tatry 1100 m Hala Ornak, VII 1949, leg. BLESZYŃSKI“, author's coll.
- Fig. 2. *Catoptria coultonella* (DUP.) ♀. „Tatry ok. 1300 m Mala Świnica, 27 VI 1950, leg. BLESZYŃSKI“, author's coll.
- Fig. 3. *Catoptria coultonella* (DUP.) ♂. „Tatry 2000 m Beskid, 27 VII 1948, BLESZYŃSKI“, author's coll.
- Fig. 4. *Catoptria coultonella* (DUP.) ♂. „Tatry ok. 1300 m Mala Świnica, 23 VI 1950, leg. BLESZYŃSKI“, author's coll.
- Fig. 5. *Catoptria coultonella* (DUP.) ♂. „Piemonte Biella Atta val Cervo, VII 1938, A. FIORI“, author's coll.
- Fig. 6. *Catoptria coultonella* (DUP.) ♂. „Tatry 2000 m Beskid, 1 VII 1946, BLESZYŃSKI“, author's coll.
- Fig. 7. *Catoptria combinella* (DEN. & SCHIFF.) ♂. „Ammerwaldgeb. Frieder, 1700—2000 m, 27 VIII 1948, coll. OSTHELDER“, author's coll.
- Fig. 8. *Catoptria combinella* (DEN. & SCHIFF.) ♀. „Styria Gesäuse Zinödl 1700 m, 3 VII 1947, J. KLIMESCH“, author's coll.



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Plate LXXXV

- Fig. 1. *Catoptria biformella* (REBEL) subsp. *maiorella* (DREN.) ♂. „Alibotuschgeb. N-O. Mazedonien AL. K-ow. DRENOWSKI“.
- Fig. 2. *Catoptria orientella* (H.-S.) ♂. „Siebenbürg. 24 VII 1905“, author's coll.
- Fig. 3. *Catoptria biformella* (REBEL) ♂. „15—25 VII 1933, Pirin Gb. 2000 m Bulgarien, leg. THURNER“, author's coll.
- Fig. 4. *Catoptria biformella* (REBEL) ♀. „15—25 VII 1933, Pirin Gb. 2000 m Bulgarien, leg. THURNER“, author's coll.
- Fig. 5. *Catoptria biformella* (REBEL) ♂. „Witoscha planina AL. K. DRENOWSKI“, author's coll.
- Fig. 6. *Catoptria lythargyrella* (HBN.) ♂. „Puszcza Kampinoska [Polonia c.] Wydma Łuże, 23 VIII 1950, leg. BLESZYŃSKI“, author's coll.

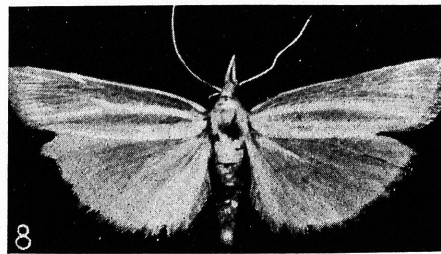
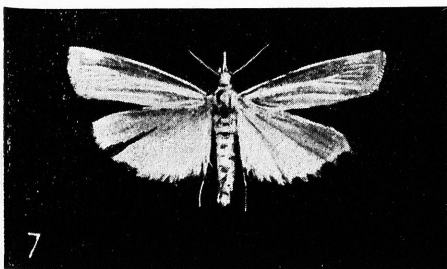
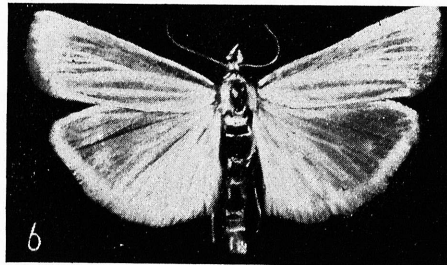
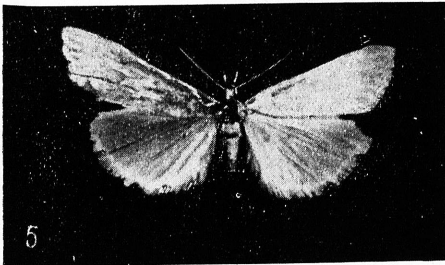
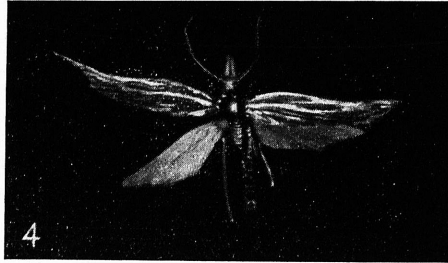
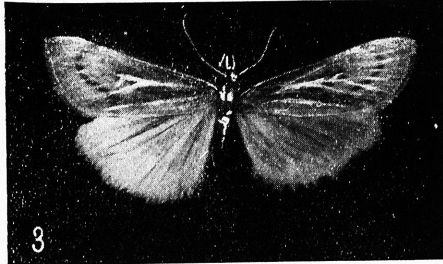
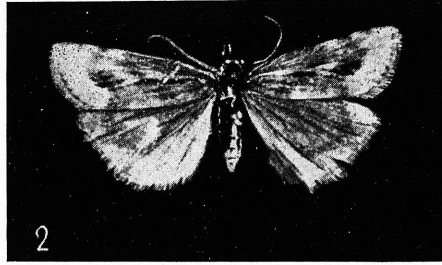
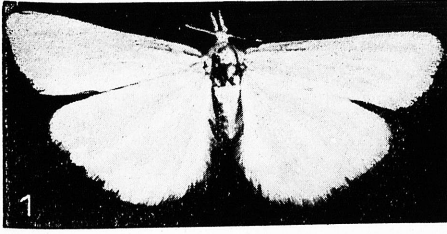
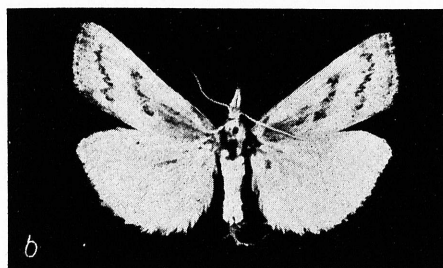
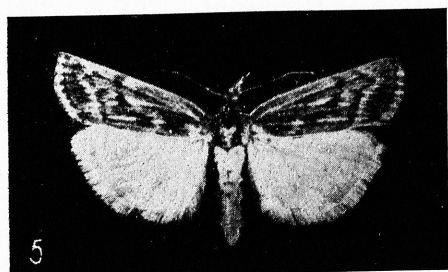
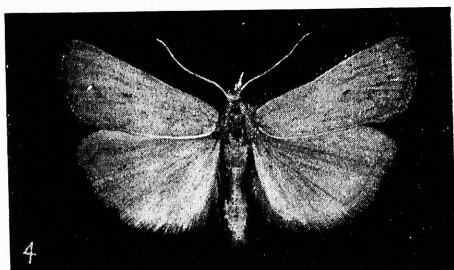
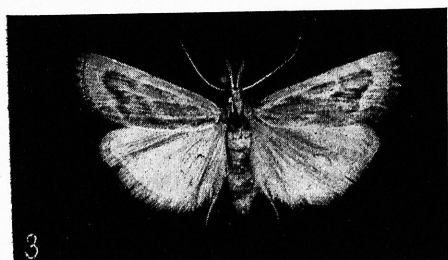
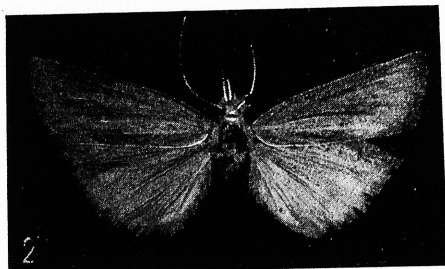
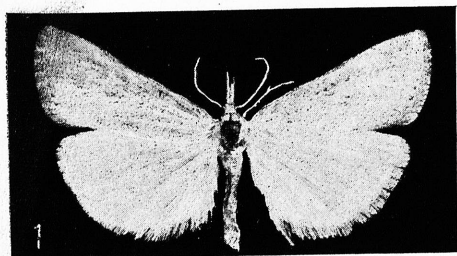


Plate LXXXVI

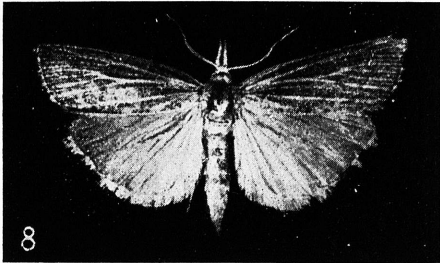
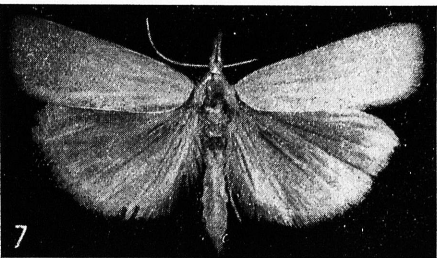
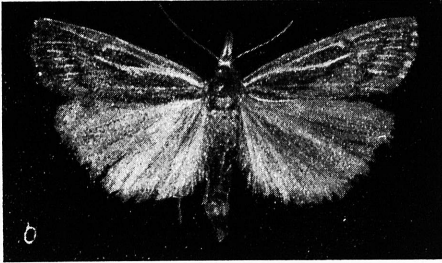
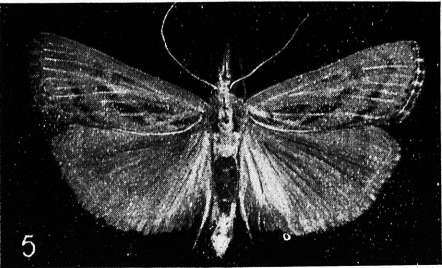
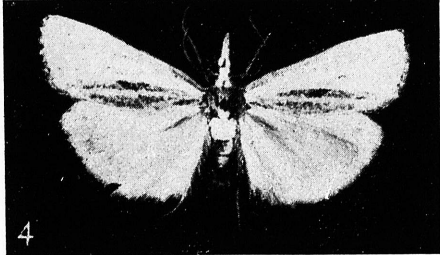
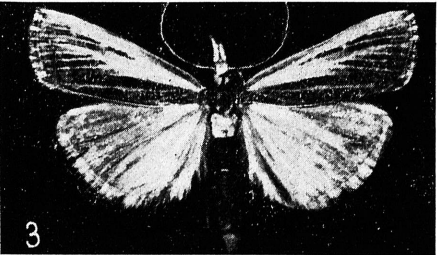
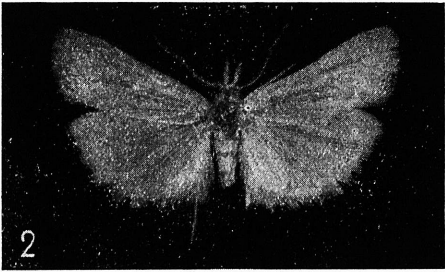
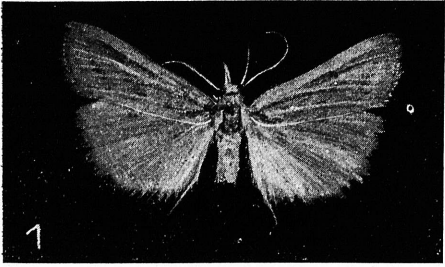
- Fig. 1. *Pediasia pedriolella* (DUP.) ♂. Alps, author's coll.
- Fig. 2. *Pediasia pedriolella* (DUP.) ♀. „F. 99 *spuriellus* Stilfser Joch Still“. „51117“, „Stilfser Joch August“, „Praep. Gen. Nr. 197“, author's coll.
- Fig. 3. *Pediasia jucundella* (H.-S.) ♂. „Kamarae., 1935 VIII 18“, „Budapest, UHRIK“, author's coll.
- Fig. 4. *Pediasia jucundella* (H.-S.) ab. *simplicella* (SZENT-IVANY & UHRIK), ♂. „Cotyp“. „Budapest, UHRIK“, Kamaraedö, 1928 VIII 12“, author's coll.
- Fig. 5. *Pediasia? epineura* (MEYR.) ♀. „Sarepta STAUDING. 1864“, coll. Museum of the Natural History in Vienna.
- Fig. 6. *Pediasia epineura* (MEYR.) ♂. „Sarepta 1861“, „*jucundella* coll. MANN“, coll. Museum of the Natural History in Vienna.
- Fig. 7. *Pediasia epineura* (MEYR.) ♂. „Orenburg“, „Praep. Gen. Nr. 275“, author's coll.
- Fig. 8. *Pediasia epineura* (MEYR.) ♀. „Sarepta“, „Praep. Gen. Nr. 256“, author's coll.



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Plate LXXXVII

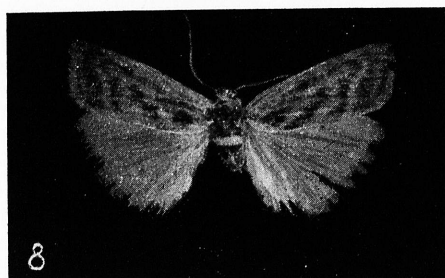
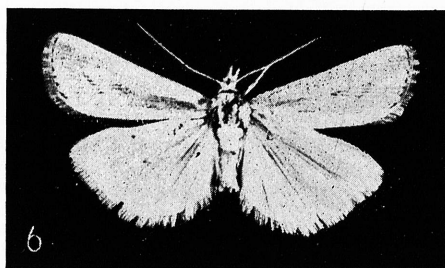
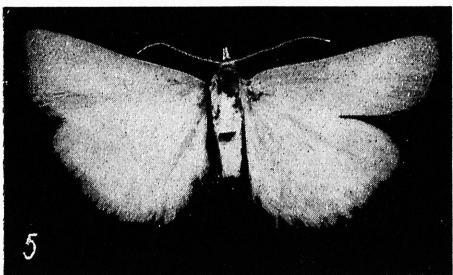
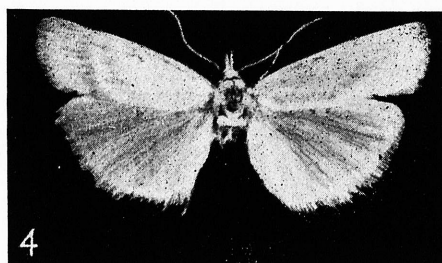
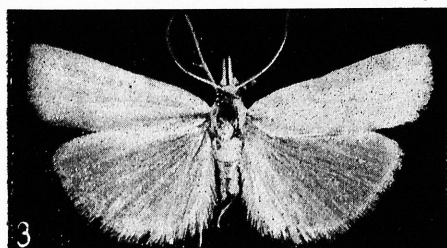
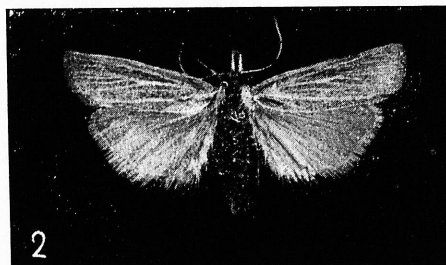
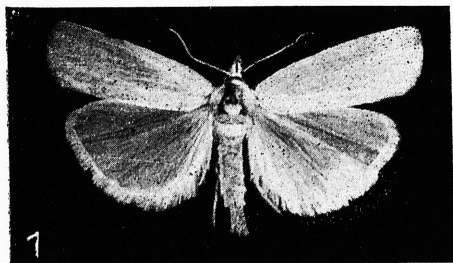
- Fig. 1. *Pediasia adamczewskii* BLESZ. ♂. „F. 6. S. Ural m. Guberli. DUSKE“, „*Crambus epineurus* MEYR. determ. trans. ex coll. Mus. Stettin“, „*Pediasia adamczewskii* BLESZ. Holotypus, praep. gen. Cramb. MZP Nr. 24, praep. BLESZYŃSKI 1951“, coll. I. Z. P. A. S., Warszawa.
- Fig. 2. *Pediasia sareptella* BLESZ. ♂. „1871 Rossia m. Sarepta Z. CHR.“, „*Crambus pudibundellus* HS. determ. trans. ex coll. Mus. Stettin“, „*Pediasia sareptella* BLESZ. Holotypus praep. gen. Cramb. MZP nr 28 praep. BLESZYŃSKI 1951“, coll. I. Z. P. A. S., Warszawa.
- Fig. 3. *Pediasia fascelinella* (HBN.) ♂. „Polonia c. Wólka Kozłowska ad Tuszcz distr. Radzymin. 10 VIII 1948. leg. BLESZYŃSKI, author's coll.
- Fig. 4. *Pediasia fascelinella* (HBN.) ♂. „Kraków Podgórk, VIII 1950 BLESZYŃSKI“, author's coll.
- Fig. 5. *Pediasia fascelinella* (HBN.) ♂. „Nieder-Weser Badener Berge, Lichtfang, 13 VIII 1950, E. JÄCKH“, author's coll.
- Fig. 6. *Pediasia fascelinella* (HBN.) ♀. „Kraków Podgórk, 25 VIII 1950, BLESZYŃSKI“, author's coll.
- Fig. 7. *Pediasia luteella* (DEN. & SCHIFF.) ♂. „Kraków Podgórk, 26 V 1946 BLESZYŃSKI“, author's coll.
- Fig. 8. *Pediasia luteella* (DEN. & SCHIFF.) ♀. „Polonia mer. Przegonia distr. Kraków, 7 VII 1952, leg. BLESZYŃSKI“, author's coll.



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Plate LXXXVIII

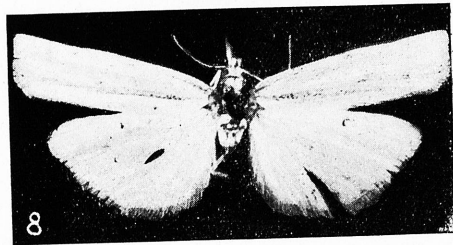
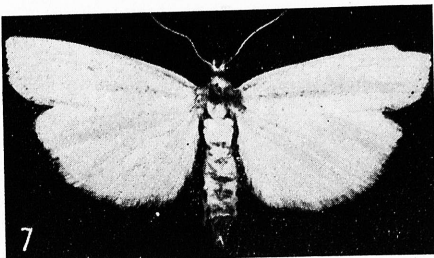
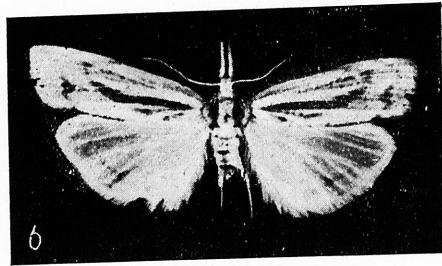
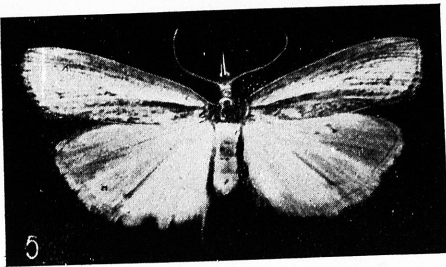
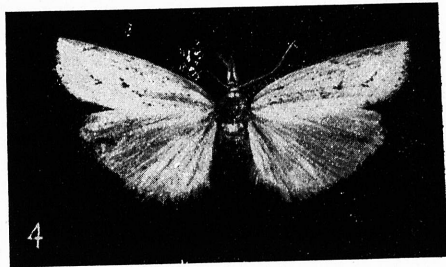
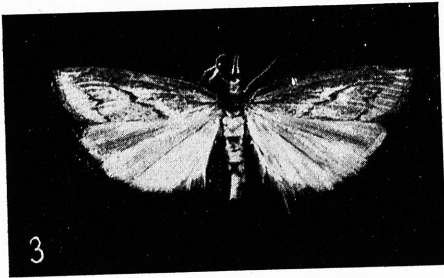
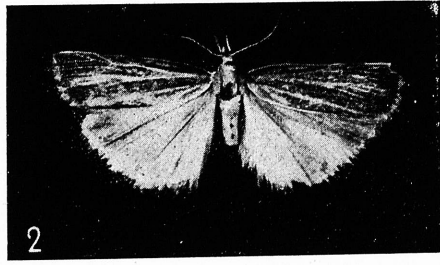
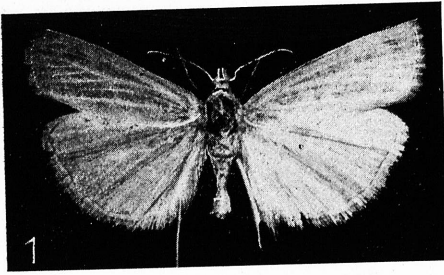
- Fig. 1. *Pediasia luteella* (DEN. & SCHIFF.) ♀. „Poznań Dębina, 6 VII 1950, A. SZMYT leg.“, author's coll.
- Fig. 2. *Pediasia luteella* (DEN. & SCHIFF.) ♀. „Rossia Mińsk, 15 VII — 15 VIII“, author's coll.
- Fig. 3. *Pediasia subflavella* (DUP.) ♂. „Corsica“, author's coll.
- Fig. 4. *Pediasia subflavella* (DUP.) ♀. „Corsica“, author's coll.
- Fig. 5. *Pediasia soffneri* BLESZ. ♂. Uralsk, author's coll.
- Fig. 6. *Pediasia soffneri* BLESZ. ♂. „Sarepta Indorsk, 26 V“, coll. H. G. AMSEL.
- Fig. 7. *Pediasia hübneri* BLESZ. ♂. „Sarepta“, „Praep. Gen. Nr. 274“, „*Pediasia hübneri* BLESZ. Holotypus“, author's coll.
- Fig. 8. *Pediasia hübneri* BLESZ. ♀. „1866 Rossia m. Sarepta CHR.“, „*Crambus epineurus* MEYR. determ. trans. ex coll. Mus. Stettin“, „Praep. Gen. Cramb. MZP Nr. 22 *Pediasia hübneri* BLESZ. allotypus, praep. BLESZYŃSKI 1951“, coll. I. Z. P. A. S., Warszawa.



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Plate LXXXIX

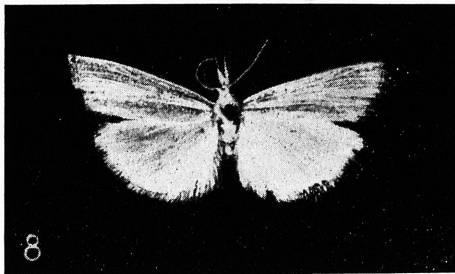
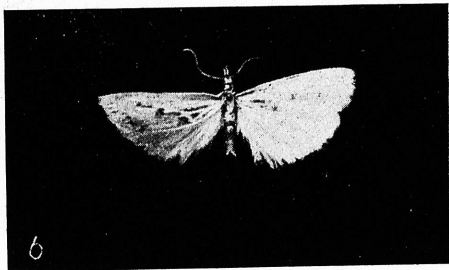
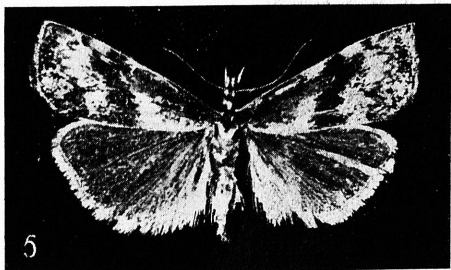
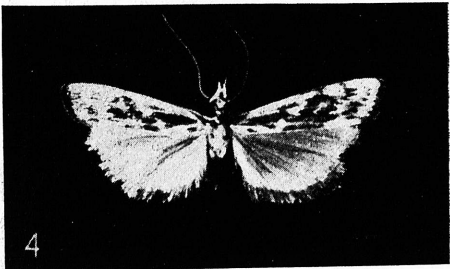
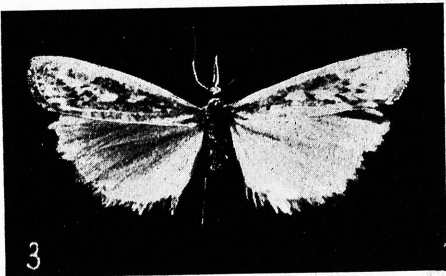
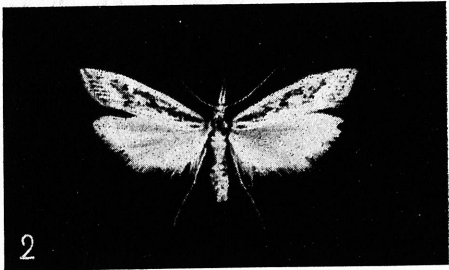
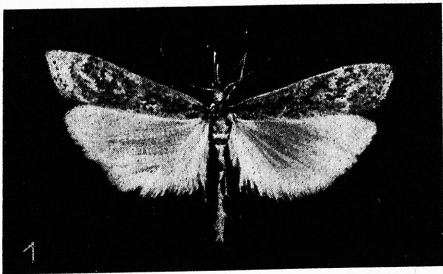
- Fig. 1. *Pediasia pudibundella* (H.-S.) ♂ „1871 Rossia m. Sarepta, Chr.“, „Praep. Gen. 248“, author's coll.
- Fig. 2. *Pediasia hispanica* BLESZ. Holotypus ♂. „Gredos, VIII 1907. ARIAS“, coll. Hungarian National Museum in Budapest.
- Fig. 3. *Pediasia contaminella* (HBN.) ♂. „Rossia Mińsk 15 VII — 15 VIII“, Praep. Gen. Nr. 128“, author's coll.
- Fig. 4. *Pediasia contaminella* (HBN.) ♀. „Polonia sept. Kretowiny distr. Morag, 15—30 VII 1953, leg. BLESZYŃSKI“, author's coll.
- Fig. 5. *Pediasia squalidalis* HBN. f. ♂. „Cz[orsztyń] Z[amek] 20 VI 1955“, author's coll.
- Fig. 6. *Pediasia squalidalis* HBN. ♂. „Ostfries. Inseln Wangeroog, Lichtfang 19 VIII 1943. E. JÄCKH“, author's coll.
- Fig. 7. *Pediasia squalidalis* HBN. subsp. *nepos* (ROTSCH.) ♂. „Mezőberény, SCHMIDT, 1910 VIII 2“, author's coll.
- Fig. 8. *Pediasia? monotona* (FIL.) ♀. „Rossia oc.-mer.“, author's coll.



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Plate XC

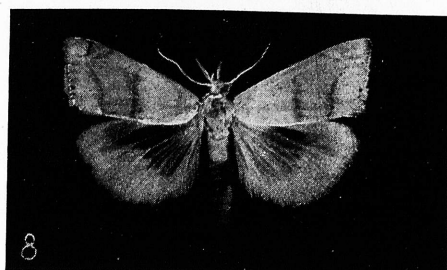
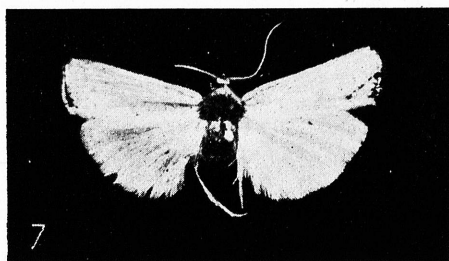
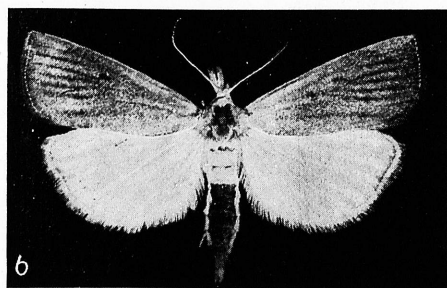
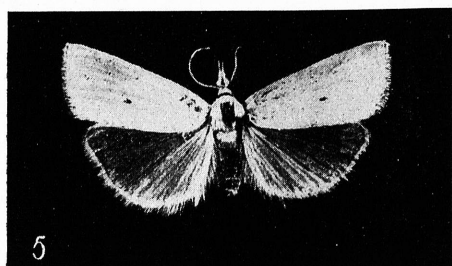
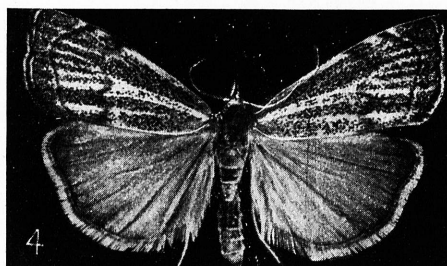
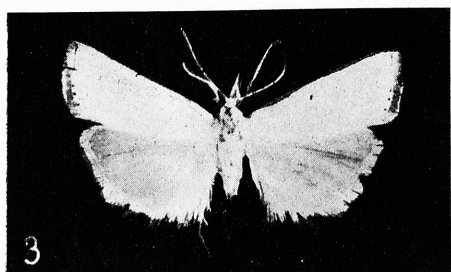
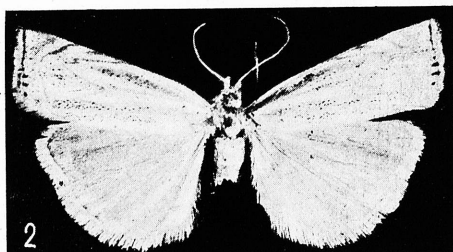
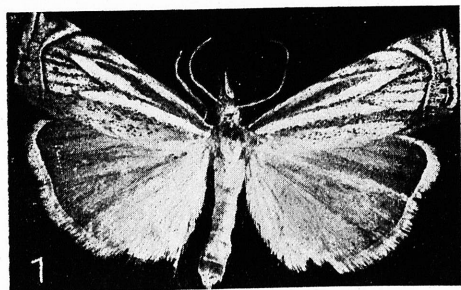
- Fig. 1. *Pediasia matricella* (TREITSCH.) ♂. „Kun. Szt. Miklós, SCHMIDT, 1911 IX 8“, author's coll.
- Fig. 2. *Pediasia matricella* (TREITSCH.) ♀. „Kun. Szt. Miklós, SCHMIDT, 1911 IX 13“, „Praep. Gen. Nr. 434“, author's coll.
- Fig. 3. *Pediasia bolivarella* (SCHMIDT) ♂. „Hispania Prov. Madrid Escorial, IX 1923“, „Cotypus *Crambus bolivarellus* SCHMIDT“, author's coll.
- Fig. 4. *Pediasia bolivarella* (SCHMIDT) ♀. „Soaheira“ [Portugal], „1920—1932 coll. L. J. & DE JOANNIS Museum Paris“, „*Crambus desertellus*“, „Praep. Gen. Nr. 267“, author's coll.
- Fig. 5. *Pediasia truncatella* (ZETT.) ♀. „1887 Livonia“, coll. I. Z. P. A. S., Warszawa.
- Fig. 6. *Pediasia desertella* (LED.) ♂. Palästina, author's coll.
- Fig. 7. *Pediasia siculella* (DUP.) ♂. „Mistretta 1000 m Sicilia, 14 IX 1938, coll. H. REISSER, Wien“, author's coll.
- Fig. 8. *Pediasia steppicolella* (ZERNY) ♂. „10 VI [18]92“, „Orenbg. mer. Tenger Oberst“, „*Crambus steppicolellus* ZERNY Type ♂“, „Praep. Nr. 3707“. Coll. Museum of the Natural History in Vienna.



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Plate XCI

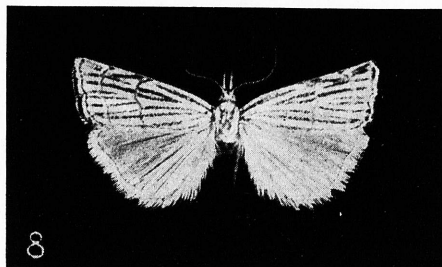
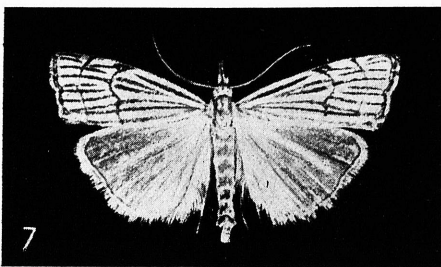
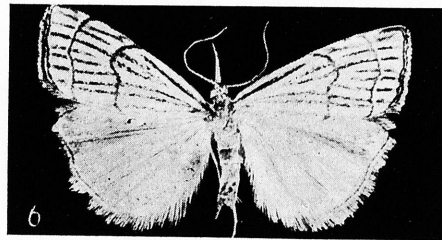
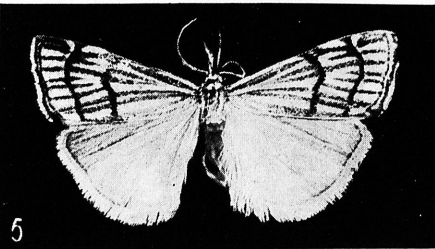
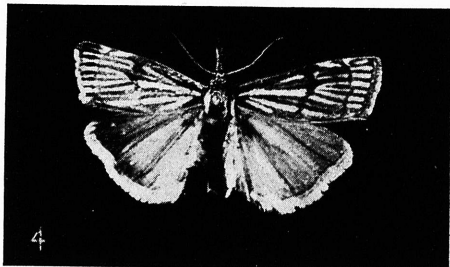
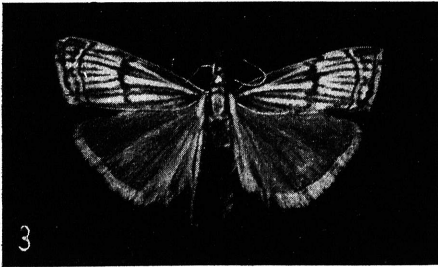
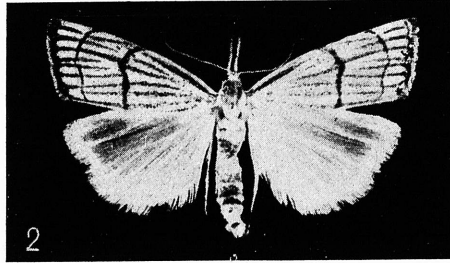
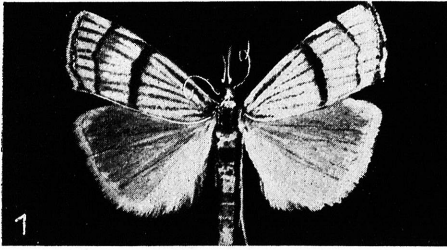
- Fig. 1. *Thisanotia lucella* (H.-S.) ♂. „1892 Lombard., TURATI“, author's coll.
- Fig. 2. *Thisanotia lucella* (H.-S.) ♀. „1892 Lombard., TURATI“, author's coll.
- Fig. 3. *Xanthocrambus occidentellus* (CAR.) ♂. „Hispania Andalusia“, author's coll.
- Fig. 4. *Thisanotia chrysonuchella* (SCOP.) ♂. „Polonia mer. Podgórk distr. Kraków, 17 V 1952, leg. BLESZYŃSKI“, author's coll.
- Fig. 5. *Xanthocrambus saxonellus* (GERM. & ZINCK.) ♂. „Bohemia Karlstein, 26 VII 1943, FR. CERNY“, „Praep. Gen. Nr. 389“, author's coll.
- Fig. 6. *Calamotropha paludella* (HBN.) ♂. „Rudze distr. Oświęcim, Polonia mer. VII 1950, leg. MİDOŃSKI“, author's coll.
- Fig. 7. *Xanthocrambus delicatellus* (ZELL.) ♂. „Typus“, „Origin“, „Sicilia“, „*Delicatellus* n. sp.“, „Praep. Gen. Cramb. Berl. Zool. Mus. Nr. 18“, „ex collect. STAUDINGER“, coll. Zoological Museum of the Humboldt University in Berlin.
- Fig. 8. *Calamotropha aureliella* (F.-R.) ♂. „Izsák, SCHMİDT, 1910 VII 30“, author's coll.



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